OGCB REPORT 71-A

# IN THE MATTER OF AN APPLICATION OF ALBERTA AND SOUTHERN GAS CO. LTD. AND IN THE MATTER OF AN APPLICATION OF CONSOLIDATED NATURAL GAS LIMITED BOTH UNDER THE GAS RESOURCES PRESERVATION ACT, 1956



OIL AND GAS CONSERVATION BOARD

603 SIXTH AVENUE SOUTH WEST • CALGARY 1, ALBERTA

REPORT TO
THE LIEUTENANT GOVERNOR IN COUNCIL

# IN THE MATTER OF AN APPLICATION OF ALBERTA AND SOUTHERN GAS CO. LTD. AND IN THE MATTER OF AN APPLICATION OF CONSOLIDATED NATURAL GAS LIMITED BOTH UNDER THE GAS RESOURCES PRESERVATION ACT, 1956

## JANUARY 1971

OIL AND GAS CONSERVATION BOARD
603 SIXTH AVENUE SOUTH WEST • CALGARY 1, ALBERTA

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# I INTRODUCTION

This report deals with applications to the Oil and Gas Conservation Board under The Gas Resources Preservation Act, 1956, of Alberta and Southern Gas Co. Ltd. (hereinafter called "Alberta and Southern") and consolidated Natural Gas Limited (hereinafter called "Consolidated"). The Board heard the applications consecutively on August 31, 1970.

The applications came forward at substantially the same time and their consideration involves the same study by the Board of Alberta's reserves of gas and the surplus situation. Neither application gave rise to any new matter for consideration. The Board decided to consider the two applications in this one report.

The Board considered the gas requirements for the Province at a hearing beginning on July 2, 1970. A decision regarding this hearing will be issued in the near future. The gas requirements used in this report are those set by the Board following the hearing as will be published in the forthcoming report.

## Application of Alberta and Southern

Alberta and Southern applied to have its Permit No. AS 69-5 amended and to have the Permit and amendments consolidated into a new permit. The proposed amendments, more fully set out in Section II of this report, would extend the term of the Permit, increase the permit volumes, add the Ricinus Field to those from which gas may be removed, increase the volume of gas that may be removed from the Judy Creek-Swan Hills area, and add to the

Permit a clause setting forth how gas acquired by the Permittee from fields other than those named in the Permit would be accounted for.

## Application of Consolidated

Consolidated applied to have its Permit No. CNG 69-1 amended by increasing the permit volumes and by adding to the list of fields and pools from which gas may be taken. The proposed amendments are more fully set out in Section IV of this report.

## Date of Assessment and Period of Protection

In this report the Board presents reserve estimates as of August 31, 1970. The period for which the Board has assessed the requirements of the Province and permit commitments is 30 years commencing September 1, 1970.

## Standard Conditions of Measurement

In this report, unless otherwise stated, volumes of gas are at the standard conditions of 14.65 pounds per square inch absolute and 60 degrees Fahrenheit. Where reserves of gas are referred to herein it means, unless otherwise specified, marketable reserves.

## Appearances

Those who appeared at the Alberta and Southern hearing are listed in Table I-1. The Alberta Division of the Canadian Petroleum Association, Alberta Gas Trunk Line Company Limited and Consolidated

intervened for the purposes of cross-examination and argument only.

The persons listed in Table I-2 appeared at the Consolidated hearing. Upon this application Alberta and Southern, The Alberta Division of the Canadian Petroleum Association and Alberta Gas Trunk Line Company Limited intervened for the purposes of cross-examination and argument only.

TABLE I-1

APPEARANCES - ALBERTA AND SOUTHERN HEARING

| | Abbreviation of Name used in Report | Represented by | Witnesses |
|---|---|---|---|
| Alberta and Southern Gas Co. Ltd. | Alberta and Southern | J. R. Smith, Q.C. and R. J. Ludgate | A. N. Boyse, P. Geol.<br>D. R. Fenton, P. Eng.<br>D. McMorland, P. Geol.<br>J. E. Powell, P. Geol.<br>A. R. Puzey, P. Geol.<br>J. T. Sullivan, P. Eng. |
| Alberta Division of the Canadian Petroleum Association | CPA | F. W. Kelly | |
| Alberta Gas Trunk Line Company Limited | Trunk Line | G. R. Forsyth | |
| Canadian Western Natural Gas Company Limited and Northwestern Utilities, Limited | Utility Companies | B. V. Massie, Q.C. | J. H. Pletcher, P. Eng. |
| Consolidated Natural Gas Limited | Consolidated | J. H. Laycraft, Q.C. and G. D. Nichols | |
| Trans-Canada Pipe Lines Limited | TransCanada | L. H. Pilon | |

TABLE I-2

APPEARANCES - CONSOLIDATED HEARING

| | Abbrevation of Name Used in Report | Represented by | Witnesses |
|---|---|---|---|
| Consolidated Natural Gas Limited | Consolidated | J. H. Laycraft, Q.C. and G. D. Nichols | J. R. Brady<br>N. J. Lashuk, P. Eng.<br>J. C. Pyle (of Northern Natural Gas Company)<br>J. Raleigh, P. Eng.<br>A. T. C. Rutgers, P. Geol.<br>H. M. Sampson<br>D. R. Seamends (of Northern Natural Gas Company) |
| Alberta and Southern Gas Co. Ltd. | Alberta and Southern | J. R. Smith, Q.C. and R. J. Ludgate | |
| Alberta Division of the Canadian Petroleum Association | CPA | F. W. Kelly | |
| Alberta Gas Trunk Line Company Limited | Trunk Line | G. R. Forsyth | |
| Canadian Western Natural Gas Company Limited and Northwestern Utilities, Limited | Utility Companies | B. V. Massie Q.C. | J. H. Pletcher, P. Eng. |
| Trans-Canada Pipe Lines Limited | TransCanada | L. H. Pilon | D. C. Fonteyne, P. Geol.<br>A. A. Wilkins, P. Geol. |

## II APPLICATION OF ALBERTA AND SOUTHERN GAS CO. LTD.

### Proposed Permit Amendments

Alberta and Southern applied for the amendments of Permit No. AS 69-5.

1. by extending the term thereof by two years to October 31, 1995;
2. by increasing the total volume of gas set forth in the Permit from 10 trillion cubic feet to 11.35 trillion cubic feet, the maximum daily volume from 1,270 million cubic feet to 1,434 million cubic feet and maximum annual volume from 416 billion cubic feet to 496 billion cubic feet;
3. by adding to the pools, fields and areas named in the Permit, the Ricinus Field;
4. by increasing the volume of gas from the Judy Creek Field, the Swan Hills Field, the Swan Hills South Field and the Virginia Hills Field that may be removed from the Province under the authority of the Permit from 270 billion cubic feet to 330 billion cubic feet;
5. by the addition of the following clause:

   "For the purposes of this permit, where gas acquired by the Permittee from fields other than those named in Clause 5 is commingled in transmission with gas acquired from pools, fields and areas named in Clause 5, such gas from fields other than those named in Clause 5 shall be deemed to be used first to supply sales to consumers,

communities and utilities in Alberta, pipe line fuel and losses and fuel and shrinkage at reprocessing plants."

Alberta and Southern also applied for the merger and consolidation in a new permit of the provisions of Permit No. AS 69-5 as it may be amended pursuant to the application.

Reserves

Alberta and Southern estimated the initial marketable reserves available in the fields now in Permit No. AS 69-5 and in the new area applied for to be some 11.58 trillion cubic feet, with all but 256 billion cubic feet in the proved category. Of the total some 73 billion cubic feet were estimated as available in Ricinus and the balance in fields now in the Permit.

The applicant did not make a detailed review of the reserves of gas in the Province. It took the Board's estimate published in OGCB Report 70-A[(1)], added to it 2.1 trillion cubic feet for growth of reserves and subtracted 1.2 trillion cubic feet for estimated production during the period December 1, 1969 to May 1, 1970, and thus arrived at a figure of 45.6 trillion cubic feet for the remaining established reserves of the Province as of May 1, 1970. The growth figure of 2.1 trillion cubic feet was an estimate made by applying both the applicant's knowledge of gas exploration in the last year and a long term growth rate of 2.5 trillion cubic feet per year for ten months.

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(1) In the Matter of an Application of Alberta and Southern Gas Co. Ltd. under The Gas Resources Preservation Act, 1956. January 1970.

In its estimates, Alberta and Southern reduced the previous Board estimate of reserves beyond economic reach to 2.8 trillion cubic feet by removing 110 billion cubic feet in the Nipisi Field from that category. After adjusting its reserve estimate to a 1,000 Btu basis and allowing 4 trillion cubic feet for gas of which production is deferred, Alberta and Southern arrived at a figure of 41.3 trillion cubic feet for contractable reserves.

Further discussion of the applicant's reserve estimates and those of the Board is presented in Appendix A.

## Reserves under Contract

Alberta and Southern submitted it had under contract over 97 per cent of the total available initial marketable gas in the fields now in its Permit and in Ricinus, the new field applied for. In the latter field it stated it had approximately one-third of the reserves under contract.

## Deliverability

The applicant's deliverability study indicated that during the proposed extended term some 10.5 trillion cubic feet of gas could be taken from fields named in its Permit. The study showed annual volumes that would be less than the proposed maximum annual volume from 1981 on and less than the applicant's annual requirements commencing in 1979.

The deliverability study did not take into account available reserves from the Belloy, Eaglesham and Tangent Fields, now in the Permit, or from Ricinus, proposed to be added, which total

249.4 billion cubic feet. These reserves would not significantly affect the conclusions of the deliverability study. Contractual arrangements were made between the time of the study and the time of the hearing to have deliveries from these fields start in November 1972.

Provision for Trunk Line and Reprocessing Plant Fuel and Shrinkage

Alberta and Southern stated that arrangements have been made to purchase from Canadain Western Natural Gas Company Limited the gas required for its share of Trunk Lines fuel and for fuel for the Cochrane reprocessing plants. It therefore showed these requirements as being supplied from fields other than those it has under contract. On the other hand the requirements for shrinkage at the Cochrane plant would be supplied from fields under contract to the applicant. These latter requirements, amounting to some 137 billion cubic feet, were forecast as ending with the year 1992. The applicant stated that forecast throughput volumes for later years would not justify the continuation of reprocessing.

The clause which Alberta and Southern asked to have added to the Permit would provide direction regarding the accounting for gas acquired from fields not named in the Permit and to be used for these and other Alberta requirements where such gas was commingled with gas that was moving to extraprovincial markets.

This matter is discussed further in Section VI.

Judy Creek, Swan Hills, Swan Hills South and Virginia Hills Fields

The applied for increase in the volume of gas that may be taken by the applicant from the subject complex of fields was stated by Alberta and Southern to represent its purchase of gas from the Virginia Hills Belloy A Pool. It stated that such gas was not produced in association with oil and that accordingly it did not regard such gas as being subject to the Gas Utilities Board order concerning gas produced from these fields and processed at the Judy Creek plant. It added that it had been assured by Northwestern Utilities, Limited that the latter had no interest in the gas in the Virginia Hills Belloy A Pool.

Markets

Alberta and Southern proposes to dispose of the additional gas for which it has applied in markets which it already serves with gas removed pursuant to its permit. It produced a letter agreement with Pacific Gas Transmission Company amending their 1961 Gas Sales Contract accordingly.

Surplus

Alberta and Southern submitted that, using the method of calculation outlined in recent Board reports, an overall surplus of 6.8 trillion cubic feet of 1,000 Btu gas was present in the Province at May 1, 1970. This total included a contractable surplus of 1.7 trillion cubic feet and a future surplus of 5.1 trillion cubic feet. In calculating future reserves, Alberta and

Southern included 11.7 trillion cubic feet in anticipation of appreciation of established reserves and new discoveries.

## III SUBMISSIONS OF INTERVENERS UPON THE APPLICATION OF ALBERTA AND SOUTHERN

### Utility Companies

The Utility Companies requested that the Board, in assessing the gas surplus to Alberta's requirements, use for Alberta requirements the quantity to be determined as a result of the recent Requirements Hearing. The Utility Companies stated further that they would have no objection to the Alberta and Southern application if the Board, upon calculating the surplus in accordance with its established policy, should find there is a sufficient surplus.

Increasing concern about the overall energy supply situation in Alberta was expressed by the Utility Companies. They urged that, until a thorough assessment has been made of the best means of utilizing all of Alberta's energy resources in meeting overall energy requirements, the Board adhere rigidly to its established method of surplus assessment in determining the gas reserves surplus to the needs of the Province.

These interveners had no objection to an increase in the volumes of gas that may be taken from fields in the Swan Hills area in accordance with the application.

### TransCanada

TransCanada argued that, where application is made for permission to remove gas from Alberta to serve a market outside of Canada, any permit that is granted should contain a condition setting a time limit for the permittee to obtain export authorization. This, TransCanada claimed, would be in the public

interest in that it would minimize the possibility of tying up reserves.

## IV APPLICATION OF CONSOLIDATED NATURAL GAS LIMITED

### Proposed Permit Amendments

Consolidated asked the Board to amend its Permit No. CNG 69-1

1. by increasing the volume of gas that may be removed from the Province during the term of the permit by 1,457 billion cubic feet to 2,992 billion cubic feet;
2. by increasing the maximum amount of gas that may be removed in a consecutive 24-hour period by 200 million cubic feet to 440 million cubic feet;
3. by increasing the quantity of gas that may be removed during any consecutive 12-month period ending December 31, by 60 billion cubic feet to 140 billion cubic feet;
4. by adding the Craigend and Donalda Fields to the list of fields, pools and areas from which gas may be removed from the Province.

Consolidated stated in its submission that the produced gas would be delivered through facilities of The Alberta Gas Trunk Line Company Limited to Empress, Alberta, from which point it would be transported to a point on the international border near Oungre, Saskatchewan by a major pipe line to be built by Consolidated Pipe Lines Company, an affiliate of the applicant. A pipe line would be built by Northern Natural Gas Company to deliver the gas from the Canadian border to a connection with its existing gas transmission system at North Branch, Minnesota. The gas would ultimately be consumed in the Northern Natural Gas Company market

area in the United States midwest, principally in Minnesota, Wisconsin and Michigan. The submission stated that gas would be made available in Canada along the route of the main pipe line to any person or community wishing to purchase it.

The submission included a letter from The Alberta Gas Trunk Line Company Limited stating that it is prepared to construct the facilities necessary to transport the additional volumes requested. The submission also included a letter from Consolidated Pipe Lines Company indicating that it would have sufficient capacity in its proposed pipe line for the transportation of the additional volumes of gas from Empress, Alberta to Oungre, Saskatchewan.

Reserves and Reserves Under Contract

Consolidated estimated the initial marketable reserves of gas in the fields included in its Permit No. CNG 69-1 or applied for to be some 6,743 billion cubic feet. Consolidated submitted that of this total, 3,249 billion cubic feet were contracted for by it. Some 2,915 billion cubic feet were said by Consolidated to be under contract to others leaving some 579 billion cubic feet not committed to any buyer. Of this 579 billion cubic feet, Consolidated calculated that 430 billion cubic feet should be considered as available to it. This volume was calculated by applying the ratio of the reserves under contract to Consolidated in each field to the total under contract to all buyers in the Field.

Consolidated submitted that the 3,249 billion cubic feet of

gas under contract plus the 430 billion cubic feet considered available to it was more than adequate for the requested volume of 2,992 billion cubic feet, even after provision for pipe line fuel, process shrinkage and losses estimated at some 220 billion cubic feet.

Consolidated included in its submission a summary of the gas purchase contracts for the Craigend and Donalda Fields. Consolidated stated that it had previously submitted forms of contracts in use in the other fields.

In assessing the total provincial reserves, Consolidated accepted the 1969 year-end estimates published by the Board in OGCB Report 70-18[1] except that it substituted its own estimates for the four fields from which it now has authority to remove gas; namely Kaybob South, Ricinus, Ricinus West and Strachan. In this manner the applicant estimated the remaining reserves of the Province, as of July 15, 1970, to be 46.9 trillion cubic feet or the equivalent of 49.3 trillion cubic feet of 1,000 Btu gas. The 49.3 trillion cubic feet results from adding to the Board's December 31, 1969 estimate of 47.7 trillion cubic feet, 2.5 trillion cubic feet as the difference between Consolidated's current estimate and the Board's year-end estimate for the four previously mentioned fields, and subtracting 0.9 trillion cubic feet of gas produced since December 31, 1969.

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(1) Reserves of Crude Oil, Gas, Natural Gas Liquids and Sulphur. Province of Alberta. December 31, 1969.

Further discussion of Consolidated's reserve estimates and the comparative estimates of the Board is presented in Appendix A and further discussion of the reserves under contract to Consolidated is presented in Appendices D and E.

Deferred Reserves

Consolidated estimated that the total of deferred reserves of marketable gas at July 15, 1970, was 3,380 billion cubic feet of 1,000 Btu gas. Consolidated estimated the deferred reserves by adopting, with the exception of the Kaybob South Field, the Board's list of deferred reserves presented in OGCB Report 69-G[(2)] and updating the estimates to reflect the remaining reserves estimated by the Board as of December 31, 1969. Consolidated presented a deliverability estimate suggesting that none of the reserves in the Kaybob South Field would be deferred.

The matter of deferred reserves is discussed further in Appendix D.

Deliverability

Consolidated presented an illustrative deliverability schedule showing that the total reserves it applied for would be deliverable during the term of Permit No. CNG 69-1. The critical feature of its schedule was the projected deliveries from the Kaybob South Field. Deliveries to Consolidated from Kaybob South were predicted by the applicant to average some 43 million cubic feet per day until 1980, some 130 million

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(2) In the Matter of an Application of Consolidated Natural Gas Limited under The Gas Resources Preservation Act, 1956. December, 1969.

cubic feet per day until 1986 and approximately 225 million cubic feet per day thereafter.

The views of Consolidated regarding the quantities of gas deliverable to it are discussed further in Appendices D and E.

Trend in Growth of Reserves

The applicant submitted that the 10-year growth rate of initial marketable reserves has averaged some 2.6 trillion cubic feet per year. No estimate was presented respecting the recent short term growth rate.

Alberta Requirements

Consolidated estimated the 30-year gas requirements of Alberta by rolling forward by 6.5 months the estimate presented to the Board by Consolidated at the Requirements Hearing on July 2, 1970. Further discussion of this matter is included in Appendix C.

Provision for Trunk Line and Reprocessing Plant Fuel and Shrinkage

Consolidated included in its submission an estimate of the total Trunk Line fuel and reprocessing plant fuel and shrinkage for all volumes of gas approved for removal from the Province. It also included an estimate of the losses associated with the permit volumes it has under authorization or has applied for.

The total reprocessing plant shrinkage associated with all volumes authorized for removal from the Province was estimated by Consolidated at some 1,578 billion cubic feet using data submitted at the recent Requirements Hearing. Consolidated

estimated that some 438 billion cubic feet of pipe line fuel and losses would be associated with volumes transported through Trunk Line and intended for extraprovincial markets bringing the total fuel, shrinkage and losses to some 2,016 billion cubic feet.

Consolidated estimated that the Alberta requirements associated with Permit No. CNG 69-1 would be some 23 billion cubic feet for pipe line fuel and some 86 billion cubic feet for reprocessing plant fuel and shrinkage, assuming that the gas would be processed prior to removal from the Province. It further estimated that if its application were granted the requirements would increase by some 31 billion cubic feet for pipe line fuel and some 80 billion cubic feet for reprocessing plant fuel and shrinkage. This would bring the total Alberta requirements related to the permit to some 220 billion cubic feet if its application were granted.

The provision for Trunk Line and reprocessing plant fuel and shrinkages is discussed further in Section VI.

## Surplus

Consolidated estimated the contractable surplus of 1,000 Btu gas at July 15, 1970 to be 3.0 trillion cubic feet and the future surplus to be 5.5 trillion cubic feet. Details of Consolidated's calculations of the surplus appear in Appendix D.

## V SUBMISSIONS OF INTERVENERS UPON THE APPLICATION OF CONSOLIDATED

### Utility Companies

The Utility Companies in their submission requested that the Board, in assessing the gas surplus to Alberta's requirements, use for Alberta requirements the quantity to be determined as a result of the recent Requirements Hearing. The Utility Companies stated further that they did not object to the application of Consolidated, if the Board should find, by using its established method of surplus assessment, that there are sufficient volumes of reserves surplus to the needs of the Province.

The Utility Companies expressed increasing concern about the overall energy supply situation in Alberta. They urged that, until a thorough assessment has been made of the best means of utilizing all of Alberta's energy resources, the Board adhere rigidly to its established method of surplus assessment in determining the gas reserves surplus to the needs of the Province.

### TransCanada

TransCanada submitted that the reserves estimated by Consolidated were overstated for the Kaybob South and Strachan Fields and submitted its own estimate for reserves in each of these fields. TransCanada estimated reserves in the Kaybob South Beaverhill Lake A Pool at some 2,396 billion cubic feet compared to 2,740 billion cubic feet estimated by Consolidated. TransCanada estimated reserves in the Strachan Field at some

2,005 billion cubic feet as compared to the Consolidated estimate of 2,070 billion cubic feet. TransCanada further submitted that it believed the quantity of gas under contract to Consolidated in the Strachan Field was in the order of 572 billion cubic feet rather than the 713 billion cubic feet submitted by the applicant.

TransCanada at the close of the hearing argued that, where application is made for permission to remove gas from Alberta to serve a market outside of Canada, any permit that is granted should contain a condition setting a time limit for the permittee to obtain export authorization. This, TransCanada claimed, would be in the public interest in that it would minimize the possibility of tying up reserves.

Further discussion of TransCanada's reserve estimates is presented in Appendix A.

## VI MATTERS OF SPECIAL CONCERN

The Board believes that a number of matters arising out of the applications are deserving of special consideration. These matters are discussed below as to the views of the applicants, the interveners and the Board.

### Trunk Line and Reprocessing Plant Fuel, Shrinkage and Losses

The Board has recently advised the holders of major permits for the removal of gas from the Province that it is amending the procedures by which it has treated the requirements in Alberta for Trunk Line fuel and losses associated with the removal of gas from the Province and for fuel, shrinkage and losses at reprocessing plants.

The procedural changes result from the Board's belief that Trunk Line fuel and losses and fuel and shrinkage at reprocessing plants are somewhat different from normal domestic, commercial and industrial Alberta requirements, since all of the former are directly dependent on the removal of gas from the Province. The Board has indicated that it intends in future to segregate these special Alberta requirements from the normal Alberta requirements in calculating the contractable Alberta surplus. The Board has also indicated that in future an applicant for a permit or an amendment to a permit will be required to satisfy the Board that suitable arrangements have been made for the purchase of the volumes of gas needed for the permit-related Trunk Line or reprocessing plant fuel and shrinkage. The Board further indicated

that in cases where the applicant does not demonstrate that suitable arrangements have been made for these requirements, the Board, in determining the volumes of gas available to the applicant, would assume that these requirements would be satisfied from the permit fields. This procedure would result in reducing accordingly the volumes available from such fields for removal from the Province.

(1) Views of Consolidated

In calculating the surplus, Consolidated segregated the Alberta requirements associated with the removal of gas from the Province from the normal Alberta requirements. Consolidated also provided for the Trunk Line fuel and reprocessing plant fuel and shrinkage associated with its Permit No. CNG 69-1 and with its application in illustrating the manner in which the volumes applied for were calculated.

Consolidated suggested that the Board should apply the new procedures for calculating the surplus to all existing permits at this time. In its view, the Board should not wait until each permittee makes an application to amend its permit before it requires the permittee to show that enough gas is available to enable it to remove the entire permit volumes from the Province. Consolidated suggested that to wait for applications from each permittee might result in a reduction in another applicant's permitted volumes even though sufficient surplus does exist. Consolidated illustrated its contention in this regard with an example.

(2) Views of Alberta and Southern

In calculating the surplus, Alberta and Southern segregated the Alberta requirements into general requirements and the permit related fuel and shrinkage requirements. In deriving the volume of gas it applied for, Alberta and Southern provided for the shrinkage at the Cochrane reprocessing plant from fields named in the permit. It provided evidence that it had arranged for the Trunk Line and Cochrane plant fuel to come from non-permit fields through an agreement with Canadian Western Natural Gas Company Limited.

Neither Alberta and Southern nor any of the interveners at either of the hearings commented on Consolidated's suggestion that the Board apply its revised accounting procedures to all permits at this time.

(3) Views of the Board

The Board believes that each permittee should have the opportunity to present evidence at a public hearing respecting the provision for Trunk Line fuel and reprocessing plant fuel and shrinkage related to the permit volumes. For this reason, it would not make the changes suggested by Consolidated for all permits until the matter has been discussed fully at a hearing called for that purpose.

The Board recognizes that the situation described by Consolidated could occur but it intends to assess the situation at the time of the next application by each permittee. If such applications are not made within a reasonable time period, the

Board may call a hearing to consider this matter further.

## Concern of the Utility Companies Respecting Overall Energy Supplies

(1) Views of the Utility Companies

The Utility Companies in their submission expressed an increasing concern about the overall energy supply situation in Alberta. By inference, they suggested that a thorough assessment should be forthcoming of the best means of utilizing all of Alberta's energy resources in meeting overall energy requirements.

(2) Views of the Board

The Board heard similar suggestions respecting the need for appraisals of the total energy resources and requirements of the Province from the Cities of Edmonton and Calgary at the recent Requirements Hearing. The Utility Companies supported this suggestion at the Requirements Hearing.

The Board has advised the Honourable the Premier of Alberta of the concern expressed at the Requirements Hearing and understands that the Government of Alberta has the matter under review at this time.

## Special Condition Clause in Permits

(1) Views of TransCanada

TransCanada, at each of the subject hearings, suggested that where a permit is granted to an applicant whose only market for gas is outside of Canada and who will therefore require other authorizations for the project, this Board should provide a

condition in the permit setting a time limit for the permittee to obtain export authorization from Canada.

(2) Views of Consolidated

Consolidated stated that its application is a bona fide application and that a necessary and requisite authority from the National Energy Board will be sought when this permit has been granted. Consolidated suggested that the Board's usual practice should be followed with respect to performance dates in existing permits.

(3) Views of the Board

It is the Board's practice that any permit granted relative to a new scheme to remove gas from the Province contain a performance condition regarding the date of the commencement of construction of project facilities. The Board does not believe that the specific inclusion of the condition that export authorization be obtained by a certain date is necessary.

With respect to an amendment to a permit relating to an existing scheme and where other authorization is required, the Board agrees that reserves approved for removal from Alberta should not be tied up for very long periods waiting for export authorization. However, the Board does not consider it necessary to include a special clause in the permit and intends to continue its practice of informal surveillance of such matters. Should there be an undue delay by a permittee in obtaining the necessary authorization the Board would call a hearing to consider changes to the permit.

## VII FINDINGS

The Board having heard publicly the applications under The Gas Resources Preservation Act, 1956, of Alberta and Southern Gas Co. Ltd. and Consolidated Natural Gas Limited, and having studied the evidence submitted by the applicants and the interveners at these public hearings, and having regard to the advice of its staff and to its own knowledge, finds as follows:

### 1. THE ESTABLISHED RESERVES OF GAS IN ALBERTA

The Board estimates the established reserves of marketable gas in the Province at August 31, 1970, to be some 45.8 trillion cubic feet, or the equivalent of 48.4 trillion cubic feet of 1,000 Btu gas.

Of the latter total, some 2.3 trillion cubic feet are now considered to be beyond economic reach and some 4.0 trillion cubic feet will have production deferred, leaving a contractable reserve of 42.1 trillion cubic feet of 1,000 Btu gas.

The present estimate of 48.4 trillion cubic feet is some 0.7 trillion cubic feet more than the Board's estimate at December 31, 1969. The increase is due mainly to additional drilling in the Ricinus, Ricinus West and Strachan Fields and to evaluation of reserves from pool performance where significant pressure and production data has become available.

Details of the Board's estimate and the discussion of the more significant changes since the Board's analusis as of December 31, 1969, are presented in Appendix A.

## 2. THE GROWTH OF RESERVES OF GAS IN ALBERTA AND THE FUTURE RESERVES TO BE CONSIDERED

The Board has recently adopted a policy of using a growth rate determined from growth over the immediately preceding 10 years to determine the gas reserves to be considered in determining the relationship of future reserves to future requirements. The Board did not make an estimate of the reserves of the Province at August 31, 1960. However, assuming that reserve growth during 1960 occurred equally by months, it can be calculated that the reserves have increased by some 24.7 trillion cubic feet over the 10 years preceding August 31, 1970. This is equivalent to an average growth rate of 2.5 trillion cubic feet per year.

The Board also recently adopted a policy of determining the number of years of growth of gas reserves used in the surplus calculation on the basis of the Province's estimated remaining reserve potential. The formula adopted by the Board results in the use of 4.5 years of reserve growth.

Since the growth rates over the last five years and over the last two years have averaged almost 3.0 trillion cubic feet per year, and having regard for other relevant factors, the Board estimates the average growth rate of initial gas reserves over the next 4.5-year period will average 2.5 trillion cubic feet per year.

Accordingly, the Board in the present circumstances recognizes 11.3 trillion cubic feet of future gas reserves, comprising 4.5 years of growth, in determining the relationship between future reserves and future requirements. Particulars of the determination of these volumes are set forth in Appendix B.

## 3. THE PRESENT AND FUTURE REQUIREMENTS FOR GAS AND THE PRESENT PERMIT COMMITMENTS

The Board estimates Alberta's requirements for the 30 years, September 1, 1970 to August 31, 2000, to be 16.0 trillion cubic feet of 1,000 Btu gas, with a peak day requirement in the 30th year of 3.5 billion cubic feet. The requirements are made up of general requirements of some 14.0 trillion cubic feet and special requirements of some 2.0 trillion cubic feet for Trunk Line and reprocessing plant fuel and shrinkage related to permits to remove gas from the Province. The present estimate represents a decrease of some 0.3 trillion cubic feet in the total 30-year requirements since the Board's last estimate, which was for the period, January 1, 1970, to December 31, 1999. The decrease results from a detailed re-study of the requirements following the Requirements Hearing of July 2, 1970.

The commitments remaining at August 31, 1970, associated with permits issued for removal of gas from the Province, total some 30.2 trillion cubic feet of 1,000 Btu gas. The Board's estimate of Alberta's requirements and permit commitments are discussed in Appendix C.

## 4. THE MEETING OF ALBERTA'S 30-YEAR REQUIREMENTS AND PRESENT PERMIT COMMITMENTS, AND THE RESULTING SURPLUS

The Board estimates that reserves totalling some 20.7 trillion cubic feet of 1,000 Btu gas are necessary to meet the annual and peak day requirements of Alberta for the 30-year period, September 1, 1970 to August 31, 2000. Of this total, 16.0 trillion cubic

feet are required for actual deliveries and the remaining 4.7 trillion cubic feet are needed to meet the 30th-year peak day. Of the total deliveries, 14.0 trillion cubic feet are for general uses within the Province and the remaining 2.0 trillion cubic feet are for Trunk Line and reprocessing plant fuel and shrinkage related to the removal of gas from the Province.

The Board's estimate of 20.7 trillion cubic feet may be considered to consist of 9.3 trillion cubic feet of contractable requirements and 11.4 trillion cubic feet of remaining requirements, the latter being a measure of the reserves needed from sources not now under contract or connected to the Alberta market.

The Board estimates that 30.3 trillion cubic feet of 1,000 Btu gas are required to meet the present permit commitments. Of this amount, some 0.1 trillion cubic feet represent the reserves needed to ensure deliverability in the terminal year for those permits under which it is contemplated that substantial daily withdrawals for which protection has historically been provided will continue to the end of the permit term.

When the contractable requirements of 9.3 trillion cubic feet and the gas needed to satisfy the permit commitments of 30.3 trillion cubic feet are deducted from the contractable reserves of 42.1 trillion cubic feet, a contractable surplus of 2.5 trillion cubic feet results.

The remaining and future reserves totalling some 17.1 trillion cubic feet of 1,000 Btu gas consist of 4.0 trillion cubic feet of deferred gas which will be available within the 30-year period, 1.7 trillion cubic feet of gas now beyond economic

reach but which the Board believes will be within economic reach and available within 30 years, 0.1 trillion cubic feet of reserves allocated to provide for the peak day in Permit No. WC 59-3 which will be available at the termination of the permit and within 30 years, and 11.3 trillion cubic feet representing 4.5 years of growth of gas reserves at a growth rate of some 2.5 trillion cubic feet per year. Comparing the total with the 11.4 trillion cubic feet of remaining Alberta requirements, results in a surplus of 5.7 trillion cubic feet in the future category. This surplus results after full provision for the 3.9 trillion cubic feet required from sources not now connected to meet Alberta's 30th-year peak day.

Details of the Board's analysis of these matters appear in Appendix D.

## 5. THE VOLUMES UNDER CONTRACT AND THE PERMIT VOLUMES APPLIED FOR

### (a) Alberta and Southern

The Board is satisfied that Alberta and Southern has sufficient reserves available to it and sufficient reserves under contract to warrant granting a permit for the total volume applied for. This is in addition to provision for the Cochrane Reprocessing Plant shrinkage for which Alberta and Southern has not purchased gas from non-permit fields. Furthermore, Alberta and Southern has under contract a sufficient portion of the reserves in each field or area to warrant naming it in the permit.

### (b) Consolidated

Consolidated stated that it had under contract some 3,249

billion cubic feet. This combined with the 430 billion cubic feet considered available to it resulted in the conclusion by Consolidated that it had under contract or available to it sufficient reserves to warrant granting the application even after provision for Trunk Line and reprocessing plant fuel and shrinkage. The Board disagrees with Consolidated's estimates and finds that the gas under contract and available to Consolidated under the Board's category of contractable reserves over the permit term are some 2,630 billion cubic feet or 2,682 billion cubic feet of 1,000 Btu per cubic foot gas. This is after provision for the permit related fuel and shrinkage.

Details of the Board's analysis of this matter are presented in Appendix E.

## 6. THE APPLICATIONS FOR REMOVAL OF ADDITIONAL QUANTITIES OF GAS AND THE SURPLUS WHICH WOULD RESULT IF THE APPLICATIONS WERE GRANTED

The Board has found that Alberta and Southern has available to it the volumes applied for and that Consolidated has available to it some 2,682 billion cubic feet of 1,000 Btu gas. If the applications were granted, in full for Alberta and Southern and in accordance with the reduced volume for Consolidated, the reserve needed to meet the commitments of all permits would increase from 30.3 trillion cubic feet to 32.8 trillion cubic feet. The permit related fuel and shrinkage would increase from 2.0 trillion cubic feet to 2.2 trillion cubic feet. The contractable surplus would be reduced from 2.5 trillion cubic feet to a deficit of 0.2 trillion cubic feet, while the future surplus would remain unchanged

at 5.7 trillion cubic feet.

The Board thus finds that the applied for volumes of gas, reduced in the case of Consolidated in accordance with Finding 5, are not in their entirety surplus to the requirements of the Province and the present permit commitments and should be reduced by a total of 0.2 trillion cubic feet. Since the additional volumes applied for, adjusted in the case of Consolidated, are approximately equal, the Board finds that each of the applications should be reduced by 0.1 trillion cubic feet. The Board is satisfied that essentially all of the reduced volumes of gas could be produced within the terms of the permits.

Since the reductions are relatively small compared to the total permit volumes, the Board sees no reason to reduce the maximum daily rates applied for.

Details of the Board's analyses of these matters are presented in Appendix E.

## 7. THE PROVISION FOR TRUNK LINE AND REPROCESSING PLANT FUEL AND SHRINKAGE

The Board has previously indicated that each permittee, at the time of the next amendment to its permit must satisfy the Board that arrangements have been made for the volumes of gas needed for permit related Trunk Line or reprocessing plant fuel and shrinkage. Such arrangements may involve a purchase of gas from non-permit fields or may provide for such volumes from permit fields over and above those volumes specified in the permit. The Board does not agree with the suggestion put forward by Consolidated Natural Gas Limited that it

should make the necessary adjustment to all of the outstanding permits at this time. The Board may at some future date call a hearing to consider permits which have not been adjusted in the normal course of events. This matter is discussed in Section VI.

## 8. THE INCLUSION OF A SPECIAL CONDITION CLAUSE IN PERMITS

The Board is satisfied that the performance clause it normally includes in permits issued for new projects for the removal of gas from the Province and its practice of informal surveillance of the matter in the case of amendments to permits related to existing schemes are adequate protection against the possibility of withholding reserves for an indefinite time period from other existing or proposed schemes. An undue delay in obtaining export authorization by any permittee could cause the Board to call a hearing to consider the matter further. This matter is discussed in Section VI.

## 9. OTHER AMENDMENTS APPLIED FOR BY ALBERTA AND SOUTHERN GAS CO. LTD.

### (1) The Application for an Extension in the Term of Its Pemit

The Board agrees with Alberta and Southern that the additional reserves, the deliverability characteristics of the fields, and the contracts which Alberta and Southern has recently entered into make an extension of the term of the Alberta and Southern permit desirable.

### (2) The Addition of the Ricinus Field to the Pools, Fields and Areas named in the Permit

The Board is satisfied that Alberta and Southern has a sufficient volume of gas under contract in the Ricinus Field to warrant the naming of the field in the permit.

(3) Increasing the Volume of Gas from the Judy Creek, Swan Hills, Swan Hills South and Virginia Hills Field

The Board is satisfied that the additional volume requested by Alberta and Southern represents gas from the Virginia Hills Belloy A Pool and as such is not gas subject to the Gas Utilities Board approval concerning gas produced from these fields. However, the Board finds the reserves in the Virginia Hills Belloy A Pool to be some 45 billion cubic feet rather than the 60 billion cubic feet requested by Alberta and Southern. The Board is satisfied that Northwestern Utilities, Limited has no interest in such gas. Accordingly the request of Alberta and Southern amended as to volume, should be granted.

(4) The Addition of a Clause Respecting the Commingling of Gas from Fields Named in a Permit with Gas from Fields not Named in a Permit

The Board is satisfied that the additional clause requested by Alberta and Southern is in accordance with the Board's earlier direction regarding the accounting for gas acquired from fields not named in a permit and to be commingled with gas moving to extraprovincial markets. This matter is discussed further in Section VI.

10. OTHER AMENDMENTS APPLIED FOR BY CONSOLIDATED NATURAL GAS LIMITED

Consolidated applied for the addition of the Craigend and Donalda Fields to the list of fields, pools and areas from which

gas may be removed from the Province. The Board is satisfied that Consolidated has gas in these fields under contract and that the fields should be added to those from which gas may be removed.

## 11. THE DISPOSITION OF THE APPLICATION OF ALBERTA AND SOUTHERN GAS CO. LTD.

In the light of its findings and its responsibility under the Act, the Board is prepared, with the approval of the Lieutenant Governor in Council, to amend Permit No. AS 69-5 by increasing the volume of gas which Alberta and Southern may remove from the Province by 1,253 billion cubic feet, by adding the Ricinus Field to the permit, by extending its term to October 31, 1995, and by making the other amendments applied for by the applicant; the permit and amendments to be consolidated in the form shown in Appendix F and subject to the terms and conditions therein contained.

## 12. THE DISPOSITION OF THE APPLICATION OF CONSOLIDATED NATURAL GAS LIMITED

In light of its findings and its responsibility under the Act, the Board is prepared, with the approval of the Lieutenant Governor in Council, to amend Permit No. CNG 69-1 by increasing the volume of gas which Consolidated may remove from the Province by 996 billion cubic feet, and by adding the additional new fields and areas applied for, the amendment to be in the form shown in

Appendix G and subject to the terms and conditions therein contained.

Respectfully submitted,

G. W. Govier, P. Eng.
Chairman

A. F. Manyluk, P. Eng.
Deputy Chairman

Vernon Millard
Board Member

Dated at Calgary, Alberta

this 28th day of January, A. D. 1971.

## APPENDIX A

## THE ESTABLISHED RESERVES OF GAS IN ALBERTA

The Board estimates the remaining established reserves of marketable gas in Alberta at August 31, 1970, were 45.8 trillion cubic feet, or the equivalent of 48.4 trillion cubic feet of 1,000 Btu gas. The initial established reserves obtained by adding the cumulative production to August 31, 1970 of 10.7 trillion cubic feet were 56.5 trillion cubic feet. The estimate of remaining established reserves represents an increase on an actual heating value basis of some 0.6 trillion cubic feet since December 31, 1969, when the Board's estimate was 45.2 trillion cubic feet.

Alberta and Southern estimated the remaining established reserves, on an actual heating value basis, as of May 1, 1970 to be 45.6 trillion cubic feet. Alberta and Southern made this estimate by further adjusting the Board's estimate as of May 31, 1969, adjusted to November 30, 1969, as published in OGCB Report 70-A[1] to account for production and to reflect what it considered the increase in reserves to be over the period May 31, 1969 to May 1, 1970.

Consolidated estimated the remaining established reserves, on an actual heating value basis, as of July 15, 1970, to be 46.9 trillion cubic feet. Consolidated made this estimate by adjusting the Board's estimate of the year-end reserves as published in

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(1) In the Matter of an Application of Alberta and Southern Gas Co. Ltd. under The Gas Resources Preservation Act, 1956. January 1970.

OGCB Report 70-18[2] to account for production and to reflect what it considered the increase in reserves to be over the period January 1, 1970 to July 15, 1970 for four fields from which it has contracted to purchase gas.

While only the established reserves are discussed in this report, the Board has calculated proved and probable reserves of gas. The definitions and interrelationships of these categories of reserves are as follows:

Proved Reserves are the recoverable gas reserves within the area of a pool completely delineated by drilled wells. A portion of such reserves may be in drilling spacing units presently undrilled, but the nature of their occurrences is such that there is every reasonable probability that these reserves will be recovered.

Probable Reserves are the reserves of gas estimated to be recoverable from the pool beyond the proved limits of the pool. The probable pool limits are based on normal geological expectation.

Established Reserves are the reserves of gas whose existence and estimated amount can reasonably be counted upon. They include all of the proved reserves and a judgment portion (usually 50 per cent) of the probable reserves.

In its estimate of reserves, the Board has had regard for the estimates presented by the applicants and interveners at the hearings, the estimates included in various submissions presented

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(2) Reserves of Crude Oil, Gas, Natural Gas Liquids and Sulphur. Province of Alberta. December 31, 1969.

recently to the Board, the individual reserve estimates made available by companies following informal contacts by the Board staff, and evaluations made by the staff. The staff has reviewed all estimates submitted by the applicants, the interveners, and others, as well as its own previous estimates where desirable because of production history, additional drilling or other new data.

The majority of the increases in the Board's estimates of remaining marketable reserves in the seven-month period ending August 31, 1970, were the result of successful development drilling in various pools, and the majority of the reductions were due to the production of gas during the period and to new reserve estimates based on the material balance method of calculating reserves. Further reductions resulted from a review of the reserves of pools penetrated only by abandoned wells. Reserves for abandoned wells in which the zone had never been tested were deleted. Reserves of abandoned wells in which the zone had been tested were subject to an economic review. In reviewing the reserves of zones which had been tested, the Board found that many such reserves were too small to economically justify the drilling out of an abandoned well or the drilling of a new well, and were therefore also deleted. As a result of this review of abandoned pools, the Board deleted from its estimate of remaining marketable reserves 159 billion cubic feet because the strata had never been tested, the majority of the reserves being in the 1 to 3 billion cubic feet range. The Board also deleted 109 billion cubic feet of reserves which were economically too

small to justify the drilling of a well. These reserves were all in pools less than 1.0 billion cubic feet. The Board used the same economic criteria it had established for abandoned reserves in a review of reserves considered to be beyond economic reach. This study resulted in the shift of some 310 billion cubic feet of reserves from the beyond economic reach category to the within economic reach category.

A comparison of the Board's reserve estimates for the year ending December 31, 1969, and at August 31, 1970, follows:

| | Actual Basis | 1,000 Btu Basis |
|---|---|---|
| | (Trillions of Cubic Feet) | |
| Remaining Established Reserves of Marketable gas at December 31, 1969 | 45.2 | 47.7 |
| Net Additions to Reserves | 1.6 | 1.7 |
| Marketable Gas Produced | 1.0 | 1.0 |
| Remaining Established Reserves of Marketable Gas at August 31, 1970 | 45.8 | 48.4 |

The following tabulation lists some of the larger pools for which there have been significant changes in the Board's estimates of initial marketable reserves (unadjusted for heating value) or for which there are significant differences between the Board's estimate and the reserve estimates of other interested parties:

| Field or Area<br>Pool or Stratum | Board's Estimates as of Dec. 31 1969 (Bcf) | Board's Estimates as of Aug. 31 1970 (Bcf) | Other Estimates as of Aug. 31, 1970 Estimators | Other Estimates as of Aug. 31, 1970 Estimates (Bcf) |
|---|---|---|---|---|
| Brazeau River<br>Shunda (part of Elkton-Shunda B) | 74 | 130 | Alberta and Southern | 132 |
| Crossfield<br>Wabamun A | 890 | 600 | None | |
| Jumping Pound<br>Mississippian | 560 | 620 | None | |
| Kaybob South<br>Beaverhill Lake A | 2,300 | 2,400 | Consolidated<br>TransCanada | 2,740<br>2,396 |
| Lone Pine Creek<br>Wabamun A | 270 | 320 | None | |
| Medicine Hat<br>Milk River A | Nil | 50 | None | |
| Ricinus<br>D-3A | 80 | 180 | Alberta and Southern<br>Consolidated | 73*<br>303 |
| Ricinus West<br>D-3A | 180 | 1,000 | Consolidated | 1,478 |
| Strachan<br>D-3A & D-3B | 1,200 | 1,760 | Consolidated<br>TransCanada | 2,070<br>2,005 |

* Alberta and Southern's estimate covers only a portion of the pool.

Brazeau River Elkton-Shunda B Pool (Shunda part): The Board's estimate of initial marketable reserves in the Shunda part of the Brazeau River Elkton-Shunda B Pool has been increased by 56 Bcf since December 31, 1969, due to the addition of two new wells and a re-evaluation of the reserve based on the additional well information.

Crossfield Wabamun A Pool: The gas reserves in the Crossfield Wabamun A Pool have been decreased by 290 Bcf based on a material

balance study of this pool. The result of the Board's material balance agrees closely with the reserve estimate of the main operator of the pool.

<u>Jumping Pound Mississippian</u>: The Board used a material balance approach for its estimation of reserves in this pool. As a result of the material balance work, the estimate of reserves increased by 60 Bcf to 620 Bcf. Results of work done by the Board on this pool were in close agreement with that of the main operator.

<u>Kaybob South Beaverhill Lake A Pool</u>: The increase in reserves of 100 Bcf since December 31, 1969, is attributed to an increase in the recovery factor from 80 to 85 per cent. The Consolidated estimate is substantially larger than that of the Board. The difference between these estimates is due in main to a variance in opinion concerning the volume of the reservoir and certain reservoir parameters.

<u>Lone Pine Creek Wabamun A Pool</u>: This pool was re-evaluated after the addition of six new wells since December 31, 1969, and the reserves have been increased by 50 Bcf.

<u>Medicine Hat Milk River A Pool</u>: As a result of the continued drilling activity in the Bantry-Alderson-Medicine Hat area several new reserves have been established and old reserves re-evaluated. The most significant change in the Milk River reserves was the development of a new pool, recently designated the Medicine Hat

Milk River A Pool, for which the Board estimates the reserves to be 50 Bcf.

Ricinus D-3A Pool: As a result of an additional well, the Board has increased the reserves in this pool to 180 Bcf. The principal difference between Consolidated's estimate and the Board's is the areal extent of the reservoir and thus the reservoir volume.

Ricinus West D-3A Pool: Three new wells increased the estimated reserves in this pool from 180 Bcf to 1,000 Bcf. The principal difference between the estimates of the Board and Consolidated is in the reservoir volume and relates to areal extent. The Board does not agree with Consolidated's estimate of the position of the zero isopach.

Strachan D-3A and D-3B Pools: Three new wells in the Strachan area have resulted in an increase in the estimated reserves of the Strachan D-3A Pool of 500 Bcf to 1700 Bcf, and the declaration of a new pool, the Strachan D-3B Pool. The reserves of the latter pool have been estimated by the Board at 60 Bcf. The Board interprets the reserves as existing in two pools because of a difference in gas-water interfaces, while TransCanada and Consolidated both use a one pool concept. For this reason and because of the wide variety of opinion concerning the shape of the reservoir(s), TransCanada and Consolidated have substantially higher reserve estimates than that of the Board.

The Board's estimates of established reserves of gas tabulated by fields and areas are presented in Table A-1. Within each field or area, pools designated by Board orders and having initial marketable reserves of 10 billion cubic feet or greater are shown separately. The reserves of the remaining pools in a field or area are grouped by geological formation. The table does not show separately fields or areas where the Board's estimate of initial marketable reserves is less than 10 billion cubic feet unless the reserve is supplying a market.

The table includes the Board's estimate of reserves but not the detailed reservoir factors for four confidential pools considered at the hearings. These pools are in the Elnora, Ricinus West and Ukalta Fields. The sum of the reserves of other confidential pools or strata, and the sum of reserves in non-producing fields or areas having an initial marketable reserve of less than 10 billion cubic feet are shown at the end of the table. These reserves are also included in the provincial total.

TABLE A-1 - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU.FT. | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| ACHESON | | | | | | | | | |
| VIKING | 5 | 0.75 | 0.05 | 4 | 3 | 1 | 1020 | 1 | |
| BLAIRMORE | 11 | 0.80 | 0.10 | 9 | 1 | 8 | 1040 | 8 | |
| BLAIRMORE ASSOC | 19 | 0.85 | 0.10 | 14 | 6 | 8 | 1050 | 8 | |
| BLAIRMORE SOLN | 7 | 0.65 | 0.55 | 2 | 2 | □ 1 | 1050 | □ 1 | |
| D-3 A SOLN | 76 | 0.70 | 0.55 | 26 | 8 | 18 | 1070* | 19 | |
| ACHESON EAST | | | | | | | | | |
| BLAIRMORE | 2 | 0.85 | 0.10 | 2 | | 2 | 1050 | 2 | |
| BLAIRMORE SOLN | 10 | 0.30 | 0.50 | 2 | | 2 | 1050 | 2 | |
| ADEN | | | | | | | | | |
| BOW ISLAND | 5 | 0.85 | 0.05 | 4 | | 4 | 1000 | 4 | |
| BASAL COLORADO | 6 | 0.85 | 0.05 | 5 | 2 | 3 | 1000 | 3 | |
| MANNVILLE | 1 | 0.80 | 0.05 | 1 | | 1 | 1020 | 1 | |
| JURASSIC | 2 | 0.90 | 0.05 | 2 | 1 | 1 | 1040 | 1 | |
| RUNDLE A | 34 | 0.80 | 0.13 | 24 | 9 | 15 | 1040 | 16 | |
| RUNDLE (OTHER) | 2 | 0.90 | 0.05 | 2 | 1 | 1 | 1040 | 1 | |
| ALDERSON | | | | | | | | | |
| MILK RIVER D | 340 | 0.55 | 0.05 | 180 | 8 | 172 | 960 | 165 | 117480 |
| 2WS A | 500 | 0.70 | 0.05 | 330 | 23 | 307 | 960 | 295 | 321500 |
| BOW ISLAND | 17 | 0.80 | 0.05 | 13 | 1 | 12 | 1000 | 12 | |
| BASAL COLORADO | 13 | 0.85 | 0.05 | 10 | | 10 | 1030 | 10 | |
| ALEXANDER | | | | | | | | | |
| BASAL QUARTZ A | 140 | 0.85 | 0.03 | 120 | 112 | 8 | 1060* | 8 | |
| MANNVILLE (OTHER) | 5 | 0.40 | 0.05 | 2 | 2 | □ 1 | 1060* | □ 1 | |
| ALEXIS | | | | | | | | | |
| MANNVILLE | 17 | 0.85 | 0.05 | 13 | | 13 | 1040 | 14 | |
| BANFF | 4 | 0.85 | 0.05 | 3 | | 3 | 1060 | 3 | |
| BANFF ASSOC | 12 | 0.85 | 0.05 | 9 | | 9 | 1060 | 10 | |
| ALIX | | | | | | | | | |
| MANNVILLE | 10 | 0.90 | 0.05 | 8 | | 8 | 1090* | 9 | |
| D-2 ASSOC | 4 | 0.85 | 0.35 | 2 | | 2 | 1130* | 2 | |
| D-2 SOLN | 9 | 0.65 | 0.65 | 2 | | 2 | 1130* | 2 | |
| AMBER | | | | | | | | | |
| SLAVE POINT | 3 | 0.90 | 0.15 | 2 | | 2 | 1100 | 2 | |
| SULPHUR POINT | 2 | 0.90 | 0.20 | 1 | | 1 | 1100* | 1 | |
| MUSKEG | 6 | 0.90 | 0.25 | 4 | | 4 | 1120* | 4 | |
| MUSKEG ASSOC | 2 | 0.85 | 0.25 | 2 | | 2 | 1120* | 2 | |
| MUSKEG SOLN | 2 | 0.60 | 0.25 | 1 | | 1 | 1120* | 1 | |
| KEG RIVER | 7 | 0.90 | 0.20 | 5 | | 5 | 1200* | 6 | |
| KEG RIVER A ASSOC | 14 | 0.90 | 0.15 | 11 | | 11 | 1200* | 13 | 160 |
| KR ASSOC (OTHER) | 19 | 0.90 | 0.20 | 14 | | 14 | 1200* | 17 | |
| KEG RIVER SOLN | 9 | 0.70 | 0.25 | 5 | | 5 | 1200* | 6 | |
| AMIGO | | | | | | | | | |
| SLAVE POINT | 1 | 0.85 | 0.15 | 1 | | 1 | 1050* | 1 | |
| SULPHUR PT 8-119-7 | 15 | 0.85 | 0.15 | 11 | | 11 | 1050* | 12 | 160 |
| MUSKEG | 3 | 0.90 | 0.15 | 3 | | 3 | 1100* | 3 | |
| KEG RIVER ASSOC | 12 | 0.85 | 0.15 | 9 | | 9 | 1150* | 10 | |
| ANTE CREEK | | | | | | | | | |
| PEACE RIVER | 11 | 0.85 | 0.05 | 8 | | 8 | 1100 | 9 | |

□ MEANS LESS THAN
* MEASURED HIGHER HEATING VALUE

** INCLUDES ASSOCIATED GAS PRODUCTION
*** DEFINITIONS OF COLUMN HEADINGS APPEAR IN APPENDIX 1

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESSIBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS | Line |
| | | | | | | | | | 1966 NUL | 2 |
| | | | | | | | | | 1967 NUL | 3 |
| | | | | | | | | | 1967 NUL | 4 |
| | | | | | | | | | 1966 NUL | 5 |
| | | | | | | | 5080 | 1950 | 1966 NUL | 7 |
| | | | | | | | | | 1967 | 10 |
| | | | | | | | | | 1970 NUL | 11 |
| | | | | | | | | | 1968 CMG | 14 |
| | | | | | | | | | 1968 CMG | 15 |
| | | | | | | | | | 1966 CMG | 16 |
| | | | | | | | | | 1968 CMG | 17 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 2860 | 1961 | 1969 CMG | 19 |
| | | | | | | | | | 1965 CMG | 20 |
| 23 | 0.21 | 0.45 | 440 | 65 | 0.94 | 0.57 | 960 | 1941 | 1970 TCPL AND LOCAL | 23 |
| | | | | | | | | | UTILITY | 24 |
| 5 | 0.20 | 0.40 | 830 | 80 | 0.90 | 0.58 | 1970 | 1956 | 1967 TCPL | 25 |
| | | | | | | | | | 1964 TCPL | 26 |
| | | | | | | | | | 1965 LOCAL UTILITY | 28 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 3830 | 1954 | 1967 NORTH CANADIAN OILS | 31 |
| | | | | | | | | | AND CALGARY POWER | 32 |
| | | | | | | | | | 1961 NORTH CANADIAN OILS | 33 |
| | | | | | | | | | AND CALGARY POWER | 34 |
| | | | | | | | | | 1968 | 37 |
| | | | | | | | | | 1968 | 38 |
| | | | | | | | | | 1969 | 39 |
| | | | | | | | | | 1962 | 42 |
| | | | | | | | | | 1969 | 43 |
| | | | | | | | | | 1969 | 44 |
| | | | | | | | | | 1968 CONSIDERED BEYOND | 47 |
| | | | | | | | | | 1968 ECONOMIC REACH | 48 |
| | | | | | | | | | 1968 | 49 |
| | | | | | | | | | 1968 | 50 |
| | | | | | | | | | 1969 | 52 |
| | | | | | | | | | 1968 | 53 |
| 102 | 0.15 | 0.15 | 2240 | 160 | 0.84 | 0.70 | 5020 | 1968 | 1968 | 54 |
| | | | | | | | | | 1968 | 55 |
| | | | | | | | | | 1969 | 56 |
| | | | | | | | | | 1969 CONSIDERED BEYOND | 59 |
| 195 | 0.10 | 0.15 | 1990 | 150 | 0.87 | 0.68 | 5380 | 1969 | 1969 ECONOMIC REACH | 60 |
| | | | | | | | | | 1969 | 61 |
| | | | | | | | | | 1968 | 62 |
| | | | | | | | | | 1964 | 65 |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 POOL OR ZONE | 2 INITIAL GAS IN PLACE BCF | 3 POOL RECOVERY FRACTION | 4 SURFACE LOSS FRACTION | 5 INITIAL MARKETABLE GAS BCF | 6 MARKETABLE GAS PRODUCED AUG. 31/70 BCF | 7 REMAINING MARKETABLE GAS AUG. 31/70 BCF | 8 GROSS HEATING VALUE BTU/CU.FT. | 9 REMAINING MARKETABLE GAS AT 1000 BTU BCF | 10 AREA ACRES |
|---|---|---|---|---|---|---|---|---|---|
| ANTE CREEK (CONTINUED) | | | | | | | | | |
| GETHING 36-67-24 | 13 | 0.85 | 0.05 | 11 | | 11 | 1100 | 12 | 500 |
| GETHING | 13 | 0.85 | 0.05 | 10 | | 10 | 1100 | 11 | |
| TRIASSIC | 5 | 0.85 | 0.05 | 4 | | 4 | 1140 | 5 | |
| ANTELOPE | | | | | | | | | |
| VIKING A | 13 | 0.80 | 0.05 | 10 | 1 | 9 | 1020 | 9 | 4620 |
| BANFF | 12 | 0.80 | 0.05 | 9 | 6 | 3 | 1020 | 3 | |
| ASHMONT | | | | | | | | | |
| VIKING | 3 | 0.75 | 0.05 | 2 | | 2 | 1000 | 2 | |
| MANNVILLE | 7 | 0.80 | 0.05 | 5 | | 5 | 1020 | 5 | |
| ATHABASCA | | | | | | | | | |
| MANNVILLE | 6 | 0.85 | 0.05 | 5 | 2 | 3 | 1000 | 3 | |
| WABAMUN | 4 | 0.90 | 0.05 | 3 | | 3 | 980 | 3 | |
| ATHABASCA EAST | | | | | | | | | |
| MANNVILLE | 1 | 0.80 | 0.05 | 1 | | 1 | 1090 | 1 | |
| D-1 | 24 | 0.65 | 0.05 | 15 | 1 | 14 | 1000 | 14 | 5230 |
| ATIM | | | | | | | | | |
| VIKING | 1 | 0.80 | 0.05 | 1** | 1** | | 1000 | | |
| MANNVILLE | 1 | 0.85 | 0.05 | 1** | 1** | | 1070* | | |
| ATLEE-BUFFALO | | | | | | | | | |
| MEDICINE HAT A | 72 | 0.80 | 0.05 | 55 | 2 | 53 | 970 | 51 | 75280 |
| VIKING A | 61 | 0.75 | 0.05 | 43 | 13 | 30 | 970 | 29 | 31910 |
| VIKING B | 29 | 0.75 | 0.05 | 21 | 1 | 20 | 970 | 19 | 17310 |
| VIKING (OTHER) | 7 | 0.75 | 0.05 | 5 | | 5 | 970 | 5 | |
| BASAL COLORADO | 6 | 0.80 | 0.05 | 5 | | 5 | 1020 | 5 | |
| BASAL MANNVILLE A | 29 | 0.80 | 0.05 | 22 | | 22 | 960 | 21 | 9550 |
| BASAL MANNVILLE B | 17 | 0.80 | 0.05 | 13 | | 13 | 960 | 12 | 4990 |
| MANNVILLE (OTHER) | 6 | 0.85 | 0.05 | 5 | | 5 | 960 | 5 | |
| ATMORE | | | | | | | | | |
| MCMURRAY A | 19 | 0.75 | 0.05 | 13 | | 13 | 1020 | 13 | 13400 |
| MANNVILLE (OTHER) | 6 | 0.85 | 0.05 | 5 | | 5 | 960 | 5 | |
| BANTRY | | | | | | | | | |
| MILK RIVER A | 52 | 0.55 | 0.05 | 27 | 1 | 26 | 960 | 25 | 31200 |
| MILK RIVER (OTHER) | 2 | 0.55 | 0.05 | 1 | | 1 | 960 | 1 | |
| 2WS | 1 | 0.80 | 0.05 | 1 | | 1 | 970 | 1 | |
| VIKING | 20 | 0.80 | 0.05 | 16 | | 16 | 970 | 16 | |
| BASAL COLORADO | 3 | 0.80 | 0.05 | 3 | 1 | 2 | 970 | 2 | |
| MANNVILLE | 12 | 0.85 | 0.05 | 10 | 2 | 8 | 1030 | 8 | |
| MANNVILLE A ASSOC | 27 | 0.85 | 0.10 | 21 | | 21 | 1060* | 22 | 5040 |
| MANN ASSOC (OTHER) | 18 | 0.85 | 0.05 | 15 | | 15 | 1060* | 16 | |
| MANNVILLE A SOLN | 50 | 0.70 | 0.35 | 23 | 1 | 22 | 1060* | 23 | |
| BAPTISTE | | | | | | | | | |
| MANNVILLE | 6 | 0.80 | 0.05 | 5 | | 5 | 970 | 5 | |
| WABAMUN A | 15 | 0.80 | 0.05 | 11 | | 11 | 980 | 11 | 3840 |
| BASHAW | | | | | | | | | |
| VIKING | 5 | 0.80 | 0.05 | 4 | | 4 | 970 | 4 | |
| MANNVILLE | 19 | 0.85 | 0.05 | 16 | | 16 | 1000 | 16 | |
| MANNVILLE ASSOC | 13 | 0.80 | 0.05 | 10 | | 10 | 1030* | 10 | |
| D-3 A ASSOC | 16 | 0.80 | 0.15 | 11 | | 11 | 1100* | 12 | 2740 |
| D-3 ASSOC (OTHER) | 2 | 0.80 | 0.15 | 1 | | 1 | 1100* | 1 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| 35 | 0.15 | 0.30 | 2200 | 125 | 0.83 | 0.62 | 5670 | 1961 | 1967 |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1967 |
| 8 | 0.22 | 0.50 | 950 | 80 | 0.88 | 0.59 | 2360 | 1957 | 1967 TCPL |
| | | | | | | | | | 1967 TCPL |
| | | | | | | | | | 1956 |
| | | | | | | | | | 1956 LOCAL UTILITY |
| | | | | | | | | | 1957 LOCAL UTILITY |
| | | | | | | | | | 1957 |
| | | | | | | | | | 1957 |
| 36 | 0.12 | 0.40 | 600 | 85 | 0.93 | 0.57 | 2030 | 1950 | 1970 LOCAL UTILITY |
| | | | | | | | | | 1957 POOL ABANDONED |
| | | | | | | | | | 1963 POOL ABANDONED |
| 3 | 0.26 | 0.40 | 640 | 65 | 0.91 | 0.57 | 1640 | 1960 | 1970 TCPL |
| 5 | 0.25 | 0.50 | 990 | 80 | 0.88 | 0.60 | 2600 | 1949 | 1967 TCPL |
| 4 | 0.25 | 0.50 | 1010 | 80 | 0.87 | 0.60 | 2320 | 1954 | 1967 TCPL |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1967 |
| 7 | 0.19 | 0.50 | 1410 | 90 | 0.85 | 0.59 | 3220 | 1953 | 1967 TCPL |
| 8 | 0.19 | 0.50 | 1430 | 90 | 0.85 | 0.59 | 3290 | 1954 | 1967 |
| | | | | | | | | | 1968 |
| 7 | 0.30 | 0.45 | 390 | 75 | 0.95 | 0.57 | 1670 | 1958 | 1970 |
| | | | | | | | | | 1968 |
| 15 | 0.20 | 0.45 | 400 | 55 | 0.94 | 0.57 | 960 | 1940 | 1970 LOCAL UTILITY |
| | | | | | | | | | 1970 |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1964 CWNG |
| | | | | | | | | | 1961 TCPL |
| 5 | 0.27 | 0.30 | 1560 | 85 | 0.79 | 0.73 | 3210 | 1948 | 1969 |
| | | | | | | | | | 1968 |
| | | | | | | | 3250 | 1948 | 1969 TCPL |
| | | | | | | | | | 1968 CONSIDERED BEYOND |
| 23 | 0.15 | 0.30 | 510 | 70 | 0.93 | 0.57 | 1940 | 1959 | 1968 ECONOMIC REACH |
| | | | | | | | | | 1963 |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1966 |
| 17 | 0.05 | 0.15 | 2330 | 140 | 0.85 | 0.78 | 5760 | 1951 | 1966 |
| | | | | | | | | | 1966 |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 POOL OR ZONE | 2 INITIAL GAS IN PLACE BCF | 3 POOL RECOVERY FRACTION | 4 SURFACE LOSS FRACTION | 5 INITIAL MARKETABLE GAS BCF | 6 MARKETABLE GAS PRODUCED AUG. 31/70 BCF | 7 REMAINING MARKETABLE GAS AUG. 31/70 BCF | 8 GROSS HEATING VALUE BTU/CU FT | 9 REMAINING MARKETABLE GAS AT 1000 BTU BCF | 10 AREA ACRES |
|---|---|---|---|---|---|---|---|---|---|
| BASSANO | | | | | | | | | |
| EOW ISLAND | 3 | 0.85 | 0.05 | 2 | | 2 | 1010* | 2 | |
| BASAL COLORADO | 8 | 0.80 | 0.05 | 6 | | 6 | 1010* | 6 | |
| MANNVILLE C | 15 | 0.85 | 0.05 | 12 | | 12 | 1020* | 12 | 2580 |
| MANNVILLE (OTHER) | 3 | 0.85 | 0.05 | 2 | | 2 | 1020* | 2 | |
| | | | | | | | | | |
| BEAVER CROSSING | | | | | | | | | |
| MANNVILLE | 1 | 0.70 | 0.05 | 1 | | 1 | 1000 | 1 | |
| | | | | | | | | | |
| BH LK-FT SASK | | | | | | | | | |
| VIKING (MAIN) | 610 | 0.85 | 0.05 | 490 | 167 | 323 | 1010 | 326 | |
| VIKING (OTHER) | 37 | 0.85 | 0.05 | 30 | | 30 | 1010 | 30 | |
| MANNVILLE | 4 | 0.85 | 0.05 | 3 | | 3 | 1010 | 3 | |
| | | | | | | | | | |
| BELLIS | | | | | | | | | |
| MANNVILLE | 14 | 0.75 | 0.05 | 10 | 1 | 9 | 1015 | 9 | |
| NISKU A | 43 | 0.85 | 0.05 | 35 | | 35 | 1000 | 35 | 14750 |
| NISKU (OTHER) | 1 | 0.70 | 0.05 | 1 | | 1 | 1000 | 1 | |
| | | | | | | | | | |
| BELLOY | | | | | | | | | |
| SPIRIT RIVER | 12 | 0.75 | 0.05 | 8 | | 8 | 980 | 8 | |
| BLUESKY | 2 | 0.85 | 0.05 | 2 | | 2 | 980 | 2 | |
| GETHING | 18 | 0.85 | 0.05 | 16 | | 16 | 980 | 16 | |
| CADOMIN | 2 | 0.85 | 0.05 | 2 | | 2 | 980 | 2 | |
| | | | | | | | | | |
| TRIASSIC | 5 | 0.85 | 0.05 | 4 | | 4 | 1090 | 4 | |
| PERMIAN | 1 | 0.85 | 0.05 | 1 | | 1 | 1100 | 1 | |
| RUNDLE | 16 | 0.85 | 0.05 | 13 | | 13 | 1120 | 15 | |
| | | | | | | | | | |
| BENJAMIN | | | | | | | | | |
| RUNDLE A | 120 | 0.80 | 0.15 | 80 | | 80 | 1070 | 86 | 2610 |
| RUNDLE B | 88 | 0.80 | 0.15 | 60 | | 60 | 1070 | 64 | 2490 |
| | | | | | | | | | |
| BERLAND RIVER | | | | | | | | | |
| WABAMUN 23-57-24 | 18 | 0.80 | 0.10 | 13 | | 13 | 1020 | 13 | 125 |
| WABAMUN 10-58-24 | 15 | 0.85 | 0.10 | 11 | | 11 | 1020 | 11 | 1100 |
| LEDUC A | 440 | 0.90 | 0.25 | 300 | | 300 | 990 | 297 | 1100 |
| LEDUC (OTHER) | 3 | 0.90 | 0.05 | 2 | | 2 | 990 | 2 | |
| | | | | | | | | | |
| BERLAND RIVER WEST | | | | | | | | | |
| WABAMUN 10-58-25 | 24 | 0.90 | 0.30 | 15 | | 15 | 1020 | 15 | 1100 |
| | | | | | | | | | |
| | | | | | | | | | |
| BERRY | | | | | | | | | |
| VIKING | 1 | 0.85 | 0.05 | 1 | | 1 | 1020 | 1 | |
| MANNVILLE | 3 | 0.85 | 0.05 | 3 | | 3 | 1030 | 3 | |
| MANNVILLE ASSOC | 5 | 0.85 | 0.15 | 4 | 1 | 3 | 1030 | 3 | |
| | | | | | | | | | |
| BIG BEND | | | | | | | | | |
| WABISKAW 31-68-1 | 12 | 0.90 | 0.05 | 10 | | 10 | 990 | 10 | 1100 |
| MCMURRAY A | 26 | 0.80 | 0.05 | 19 | | 19 | 990 | 19 | 3920 |
| MANNVILLE (OTHER) | 30 | 0.75 | 0.05 | 22 | | 22 | 990 | 22 | |
| WABAMUN | 20 | 0.80 | 0.05 | 15 | | 15 | 1000 | 15 | |
| | | | | | | | | | |
| BIGORAY | | | | | | | | | |
| PASKAPOO | 2 | 0.60 | 0.05 | 1 | | 1 | 1000 | 1 | |
| MANNVILLE | 17 | 0.80 | 0.05 | 13 | | 13 | 1080 | 14 | |
| PEKISKO A | 20 | 0.85 | 0.10 | 15 | | 15 | 1080 | 16 | 6450 |
| RUNDLE (OTHER) | 7 | 0.85 | 0.10 | 6 | | 6 | 1080 | 6 | |
| | | | | | | | | | |
| BIGSTONE | | | | | | | | | |
| DUNVEGAN A | 53 | 0.90 | 0.05 | 45 | | 45 | 1140 | 51 | 6390 |
| GETHING A | 13 | 0.90 | 0.05 | 11 | | 11 | 1070 | 12 | 1100 |
| GETHING (OTHER) | 11 | 0.90 | 0.05 | 9 | | 9 | 1100 | 10 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1968 |
| 9 | 0.20 | 0.35 | 1520 | 100 | 0.82 | 0.63 | 4000 | 1968 | 1969 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1963 LOCAL UTILITY |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 2590 | 1946 | 1966 NUL AND CIGOL |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1966 TCPL |
| 38 | 0.09 | 0.20 | 560 | 80 | 0.93 | 0.57 | 2100 | 1965 | 1966 TCPL |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1970 |
| | | | | | | | | | 1970 |
| | | | | | | | | | 1970 |
| | | | | | | | | | 1970 |
| | | | | | | | | | 1970 |
| | | | | | | | | | 1970 |
| | | | | | | | | | 1970 |
| 100 | 0.06 | 0.25 | 4150 | 190 | 0.94 | 0.66 | 11220 | 1960 | 1969 |
| 86 | 0.05 | 0.25 | 3920 | 185 | 0.92 | 0.68 | 10810 | 1961 | 1969 |
| 417 | 0.04 | 0.20 | 6170 | 260 | 1.08 | 0.71 | 11850 | 1968 | 1969 |
| 34 | 0.04 | 0.20 | 6390 | 205 | 1.09 | 0.71 | 11650 | 1968 | 1969 |
| 562 | 0.08 | 0.20 | 5340 | 250 | 1.00 | 0.70 | 12290 | 1958 | 1959 |
| | | | | | | | | | 1969 |
| 71 | 0.04 | 0.20 | 4800 | 260 | 0.98 | 0.70 | 12320 | 1958 | 1959 CONSIDERED BEYOND ECONOMIC REACH |
| | | | | | | | | | 1969 TCPL |
| | | | | | | | | | 1967 TCPL |
| | | | | | | | | | 1967 TCPL |
| 29 | 0.20 | 0.30 | 800 | 80 | 0.86 | 0.59 | 2430 | 1957 | 1957 |
| 17 | 0.20 | 0.35 | 900 | 85 | 0.88 | 0.60 | 2710 | 1953 | 1965 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1959 |
| | | | | | | | | | 1969 A&S |
| 14 | 0.08 | 0.60 | 2200 | 145 | 0.82 | 0.67 | 6210 | 1962 | 1970 |
| | | | | | | | | | 1970 |
| 16 | 0.15 | 0.45 | 2600 | 145 | 0.79 | 0.69 | 6440 | 1959 | 1966 |
| 20 | 0.14 | 0.30 | 2500 | 215 | 0.89 | 0.66 | 7780 | 1960 | 1961 |
| | | | | | | | | | 1961 |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU. FT. | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| BIGSTONE (CONTINUED) | | | | | | | | | |
| WABAMUN | 11 | 0.85 | 0.40 | 5 | | 5 | 1050 | 5 | |
| D-3 A | 390 | 0.85 | 0.25 | 250 | 19 | 231 | 990* | 229 | 7100 |
| BINDLOSS | | | | | | | | | |
| VIKING A | 400 | 0.75 | 0.01 | 300 | 138 | 162 | 980 | 159 | 57050 |
| VIKING B | 32 | 0.70 | 0.05 | 21 | 2 | 19 | 980 | 19 | 6110 |
| VIKING (OTHER) | 6 | 0.75 | 0.05 | 5 | | 5 | 980 | 5 | |
| BASAL MANNVILLE A | 26 | 0.90 | 0.05 | 23 | | 23 | 990 | 23 | 5310 |
| BIRCH | | | | | | | | | |
| MANNVILLE | 7 | 0.80 | 0.05 | 6 | | 6 | 1000 | 6 | |
| NISKU | 2 | 0.85 | 0.05 | 2 | | 2 | 990* | 2 | |
| CAMROSE | 6 | 0.85 | 0.05 | 5 | | 5 | 990* | 5 | |
| BITTERN LAKE | | | | | | | | | |
| VIKING | 8 | 0.80 | 0.05 | 6 | | 6 | 1020 | 6 | |
| GLAUCONITIC A | 38 | 0.85 | 0.05 | 30 | 12 | 18 | 1070 | 19 | 3530 |
| GLAUCONITIC B | 21 | 0.85 | 0.05 | 17 | 4 | 13 | 1070 | 14 | 1210 |
| ELLERSLIE A | 14 | 0.85 | 0.05 | 12 | | 12 | 1070 | 13 | 2370 |
| MANNVILLE (OTHER) | 39 | 0.85 | 0.05 | 31 | 1 | 30 | 1070 | 32 | |
| MANNVILLE ASSOC | 1 | 0.80 | 0.05 | 1 | | 1 | 1070 | 1 | |
| BLACK | | | | | | | | | |
| SLAVE POINT | 15 | 0.90 | 0.15 | 11 | | 11 | 1100 | 12 | |
| SULPHUR POINT ASSOC | 1 | 0.85 | 0.15 | 1 | | 1 | 1100 | 1 | |
| MUSKEG | 1 | 0.85 | 0.10 | 1 | | 1 | 1100 | 1 | |
| KEG RIVER | 5 | 0.85 | 0.15 | 3 | | 3 | 1150 | 3 | |
| KEG RIVER ASSOC | 4 | 0.85 | 0.15 | 3 | | 3 | 1200 | 4 | |
| BLACK BUTTE | | | | | | | | | |
| 2WS | 2 | 0.80 | 0.05 | 1 | | 1 | 960 | 1 | |
| BOW ISLAND | 9 | 0.85 | 0.05 | 7 | 3 | 4 | 980 | 4 | |
| BASAL COLORADO A | 15 | 0.85 | 0.05 | 12 | 4 | 8 | 1000 | 8 | 2840 |
| BSL COLORADO (OTHER) | 10 | 0.85 | 0.05 | 8 | 6 | 2 | 1000 | 2 | |
| MANNVILLE (OTHER) | 7 | 0.85 | 0.05 | 5 | | 5 | 1030 | 5 | |
| SUNBURST-SWIFT A | 18 | 0.90 | 0.05 | 15 | 9 | 6 | 1000 | 6 | 2040 |
| SAWTOOTH A | 28 | 0.80 | 0.05 | 21 | 18 | 3 | 1000 | 3 | |
| RUNDLE A | 16 | 0.80 | 0.05 | 12 | 6 | 6 | 1020 | 6 | 2750 |
| BLACK DIAMOND | | | | | | | | | |
| RUNDLE A | 24 | 0.85 | 0.15 | 17 | | 17 | 1100 | 19 | 500 |
| BLUERIDGE | | | | | | | | | |
| MANNVILLE | 3 | 0.80 | 0.05 | 2 | | 2 | 1100 | 2 | |
| JURASSIC A | 14 | 0.90 | 0.05 | 12 | | 12 | 1100 | 13 | 500 |
| JURASSIC (OTHER) | 8 | 0.80 | 0.10 | 5 | | 5 | 1100 | 6 | |
| RUNDLE | 2 | 0.75 | 0.05 | 2 | | 2 | 1130 | 2 | |
| RUNDLE ASSOC | 7 | 0.80 | 0.10 | 5 | | 5 | 1130 | 6 | |
| BOLLOQUE LAKE | | | | | | | | | |
| VIKING | 2 | 0.80 | 0.05 | 1 | | 1 | 1060 | 1 | |
| MANNVILLE | 13 | 0.80 | 0.05 | 10 | | 10 | 990 | 10 | |
| BONNIE GLEN | | | | | | | | | |
| CARDIUM SOLN | 6 | 0.65 | 0.10 | 3 | | 3 | 1040* | 3 | |
| VIKING | 2 | 0.85 | 0.10 | 1 | | 1 | 1050 | 1 | |
| MANNVILLE | 5 | 0.85 | 0.10 | 4 | 3 | 1 | 1100* | 1 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11<br>AVERAGE PAY THICKNESS FEET | 12<br>POROSITY FRACTION | 13<br>LIQUID SATURATION FRACTION | 14<br>INITIAL PRESSURE PSIA | 15<br>RESERVOIR TEMPERATURE °F | 16<br>COMPRESS-IBILITY FACTOR FRACTION | 17<br>RAW GAS SPECIFIC GRAVITY | 18<br>AVERAGE WELL DEPTH FEET | 19<br>DISCOVERY YEAR | 20<br>DATE LAST REVIEWED, DISPOSITION AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 1 |
| | | | | | | | | | 1964 | 2 |
| | | | | | | | | | | 3 |
| 105 | 0.07 | 0.15 | 4800 | 240 | 0.97 | 0.69 | 11080 | 1960 | 1964 TCPL | 4 |
| | | | | | | | | | | 5 |
| | | | | | | | | | | 6 |
| 14 | 0.29 | 0.45 | 990 | 80 | 0.88 | 0.59 | 2250 | 1952 | 1969 TCPL | 7 |
| 10 | 0.29 | 0.45 | 1000 | 80 | 0.88 | 0.59 | 2530 | 1957 | 1967 TCPL | 8 |
| | | | | | | | | | 1967 | 9 |
| 7 | 0.23 | 0.40 | 1460 | 85 | 0.85 | 0.59 | 2770 | 1954 | 1967 | 10 |
| | | | | | | | | | | 11 |
| | | | | | | | | | | 12 |
| | | | | | | | | | 1962 | 13 |
| | | | | | | | | | 1962 | 14 |
| | | | | | | | | | 1969 | 15 |
| | | | | | | | | | | 16 |
| | | | | | | | | | | 17 |
| | | | | | | | | | 1967 | 18 |
| 17 | 0.25 | 0.40 | 1310 | 115 | 0.86 | 0.64 | 4010 | 1956 | 1967 CIGOL, PLAINS WEST- | 19 |
| 29 | 0.24 | 0.40 | 1370 | 115 | 0.85 | 0.64 | 4180 | 1947 | 1967 ERN GAS & ELEC AND | 20 |
| | | | | | | | | | NUL | 21 |
| | | | | | | | | | | 22 |
| 11 | 0.19 | 0.35 | 1350 | 115 | 0.83 | 0.68 | 4140 | 1952 | 1967 | 23 |
| | | | | | | | | | 1967 CIGOL | 24 |
| | | | | | | | | | 1969 | 25 |
| | | | | | | | | | | 26 |
| | | | | | | | | | | 27 |
| | | | | | | | | | 1967 CONSIDERED BEYOND | 28 |
| | | | | | | | | | 1967 ECONOMIC REACH | 29 |
| | | | | | | | | | 1967 | 30 |
| | | | | | | | | | 1967 | 31 |
| | | | | | | | | | | 32 |
| | | | | | | | | | 1967 | 33 |
| | | | | | | | | | | 34 |
| | | | | | | | | | | 35 |
| | | | | | | | | | 1961 CMG | 36 |
| | | | | | | | | | 1969 CMG | 37 |
| 15 | 0.20 | 0.40 | 930 | 80 | 0.89 | 0.58 | 2540 | 1944 | 1968 CMG | 38 |
| | | | | | | | | | 1968 CMG | 39 |
| | | | | | | | | | | 40 |
| | | | | | | | | | 1963 CMG | 41 |
| 19 | 0.20 | 0.30 | 1030 | 85 | 0.87 | 0.57 | 2960 | 1944 | 1963 CMG | 42 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 3200 | 1944 | 1967 CMG | 43 |
| 18 | 0.10 | 0.20 | 1200 | 90 | 0.87 | 0.58 | 3280 | 1944 | 1968 CMG | 44 |
| | | | | | | | | | | 45 |
| | | | | | | | | | | 46 |
| 59 | 0.10 | 0.15 | 3630 | 195 | 0.87 | 0.74 | 9020 | 1967 | 1967 | 47 |
| | | | | | | | | | | 48 |
| | | | | | | | | | | 49 |
| | | | | | | | | | 1964 | 50 |
| 26 | 0.28 | 0.30 | 1800 | 150 | 0.85 | 0.66 | 5500 | 1957 | 1966 | 51 |
| | | | | | | | | | 1968 TCPL | 52 |
| | | | | | | | | | 1968 | 53 |
| | | | | | | | | | | 54 |
| | | | | | | | | | 1969 | 55 |
| | | | | | | | | | | 56 |
| | | | | | | | | | | 57 |
| | | | | | | | | | 1966 | 58 |
| | | | | | | | | | 1967 | 59 |
| | | | | | | | | | | 60 |
| | | | | | | | | | | 61 |
| | | | | | | | | | 1969 | 62 |
| | | | | | | | | | 1963 | 63 |
| | | | | | | | | | 1964 NUL | 64 |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 POOL OR ZONE | 2 INITIAL GAS IN PLACE BCF | 3 POOL RECOVERY FRACTION | 4 SURFACE LOSS FRACTION | 5 INITIAL MARKETABLE GAS BCF | 6 MARKETABLE GAS PRODUCED AUG. 31/70 BCF | 7 REMAINING MARKETABLE GAS AUG. 31/70 BCF | 8 GROSS HEATING VALUE BTU/CU. FT | 9 REMAINING MARKETABLE GAS AT 1000 BTU BCF | 10 AREA ACRES |
|---|---|---|---|---|---|---|---|---|---|
| BONNIE GLEN (CONTINUED) | | | | | | | | | |
| WABAMUN | 1 | 0.85 | 0.10 | 1 | | 1 | 1100* | 1 | |
| WINTERBURN | 1 | 0.85 | 0.10 | 1 | | 1 | 1100* | 1 | |
| D-3 | 14 | 0.70 | 0.15 | 9 | 7 | 2 | 1100* | 2 | |
| D-3 A ASSOC | 430 | 0.85 | 0.15 | 310 | -3 | 313 | 1220* | 382 | 2990 |
| D-3 A SOLN | 540 | 0.70 | 0.25 | 280 | 69 | 211 | 1220* | 257 | |
| BONNYVILLE | | | | | | | | | |
| MANNVILLE | 5 | 0.80 | 0.05 | 4 | 3 | 1 | 980 | 1 | |
| BOUNDARY LAKE SOUTH | | | | | | | | | |
| CADOMIN | 11 | 0.80 | 0.10 | 8 | | 8 | 1060 | 8 | |
| TRIASSIC 14-86-12 | 16 | 0.85 | 0.05 | 13 | | 13 | 1050 | 14 | 4450 |
| TRIASSIC (OTHER) | 2 | 0.80 | 0.05 | 1 | | 1 | 1050 | 1 | |
| TRIASSIC ASSOC | 1 | 0.85 | 0.05 | 1 | | 1 | 1050 | 1 | |
| KISKATINAW D | 37. | 0.85 | 0.05 | 29 | 12 | 17 | 1080 | 18 | |
| KISKATINAW E | 19 | 0.85 | 0.10 | 15 | 1 | 14 | 1080 | 15 | 1100 |
| KISKATINAW (OTHER) | 9 | 0.85 | 0.05 | 7 | 3 | 4 | 1080 | 4 | |
| GOLATA A | 13 | 0.85 | 0.05 | 11 | 8 | 3 | 1080 | 3 | 1000 |
| GOLATA B | 16 | 0.85 | 0.05 | 13 | 10 | 3 | 1080 | 3 | 1000 |
| BOW ISLAND | | | | | | | | | |
| BOW ISLAND | 48 | 0.90 | 0.05 | 40 | 11 | 29 | 1030 | 30 | |
| BOYLE | | | | | | | | | |
| MANNVILLE | 6 | 0.80 | 0.05 | 5 | | 5 | 1000 | 5 | |
| NISKU | 8 | 0.85 | 0.05 | 6 | | 6 | 990 | 6 | |
| BRAEBURN | | | | | | | | | |
| CADOMIN | 1 | 0.80 | 0.05 | 1 | 1 | □ 1 | 1060* | □ 1 | |
| BALDONNEL A | 29 | 0.80 | 0.10 | 21 | 5 | 16 | 1090* | 17 | 4890 |
| BELLOY A | 55 | 0.80 | 0.05 | 42 | 3 | 39 | 1030* | 40 | 3560 |
| BRAZEAU RIVER | | | | | | | | | |
| ELKTON-SHUNDA A | 270 | 0.80 | 0.10 | 190 | 6 | 184 | 1040* | 191 | 16230 |
| ELKTON-SHUNDA B | 850 | 0.80 | 0.10 | 610 | 32 | 578 | 1080* | 624 | 46550 |
| BROOKS | | | | | | | | | |
| MILK RIVER | 9 | 0.80 | 0.05 | 7 | 4 | 3 | 990 | 3 | |
| BROWN CREEK | | | | | | | | | |
| RUNDLE 20-44-17 | 59 | 0.80 | 0.15 | 40 | | 40 | 970 | 39 | 2000 |
| BRUCE | | | | | | | | | |
| VIKING | 25 | 0.80 | 0.05 | 19 | | 19 | 1000 | 19 | |
| MANNVILLE | 8 | 0.80 | 0.05 | 6 | | 6 | 1020 | 6 | |
| BURNT TIMBER | | | | | | | | | |
| RUNDLE A | 370 | 0.85 | 0.20 | 250 | | 250 | 1030 | 258 | 12160 |
| CALAIS | | | | | | | | | |
| GETHING | 14 | 0.85 | 0.05 | 11 | 1 | 10 | 1000 | 10 | |
| CADOMIN | 7 | 0.85 | 0.05 | 5 | | 5 | 1000 | 5 | |
| CALLING LAKE | | | | | | | | | |
| MANNVILLE | 2 | 0.85 | 0.05 | 2 | | 2 | 1000 | 2 | |
| D-2 | 49 | 0.75 | 0.05 | 35 | 2 | 33 | 1000 | 33 | |
| CAMPBELL-NAMAO | | | | | | | | | |
| BLAIRMORE | 3 | 0.85 | 0.05 | 3 | | 3 | 1020 | 3 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS | |
| | | | | | | | | | 1967 | 2 |
| | | | | | | | | | 1967 | 4 |
| | | | | | | | | | 1967 NUL | 5 |
| 216 | 0.09 | 0.10 | 2440 | 140 | 0.79 | 0.70 | 6700 | 1952 | 1966 GAS STORAGE | 6 |
| | | | | | | | 7000 | 1952 | 1966 NUL | 7 |
| | | | | | | | | | 1964 LOCAL UTILITY | 10 |
| | | | | | | | | | 1964 | 13 |
| 8 | 0.12 | 0.25 | 1640 | 160 | 0.86 | 0.63 | 4300 | 1967 | 1969 | 14 |
| | | | | | | | | | 1969 | 15 |
| | | | | | | | | | 1966 | 16 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 6210 | 1964 | 1969 WESTCOAST | 18 |
| 22 | 0.13 | 0.10 | 2360 | 145 | 0.86 | 0.60 | 6130 | 1965 | 1969 WESTCOAST | 19 |
| | | | | | | | | | 1966 WESTCOAST | 20 |
| 17 | 0.14 | 0.20 | 2370 | 145 | 0.86 | 0.59 | 6100 | 1958 | 1969 WESTCOAST | 21 |
| 20 | 0.14 | 0.20 | 2370 | 145 | 0.86 | 0.59 | 6100 | 1964 | 1969 WESTCOAST | 22 |
| | RESERVE BASED ON PRODUCTION & INJECTION DATA | | | | | | 1920 | 1909 | 1953 CWNG STORAGE | 25 |
| | | | | | | | | | RESERVOIR | 26 |
| | | | | | | | | | 1966 | 29 |
| | | | | | | | | | 1966 | 30 |
| | | | | | | | | | 1969 WESTCOAST | 33 |
| 8 | 0.16 | 0.30 | 2150 | 145 | 0.86 | 0.61 | 5680 | 1954 | 1968 WESTCOAST | 34 |
| 35 | 0.11 | 0.50 | 2970 | 180 | 0.90 | 0.58 | 7280 | 1954 | 1968 WESTCOAST | 35 |
| 22 | 0.11 | 0.30 | 3870 | 335 | 0.95 | 0.68 | 9870 | 1965 | 1969 A&S AND TCPL | 38 |
| 23 | 0.10 | 0.15 | 3870 | 215 | 0.94 | 0.65 | 10030 | 1959 | 1970 A&S AND TCPL | 39 |
| | | | | | | | | | 1961 LOCAL UTILITY | 42 |
| 89 | 0.04 | 0.20 | 4550 | 115 | 0.98 | 0.64 | 10840 | 1960 | 1964 | 45 |
| | | | | | | | | | 1967 | 48 |
| | | | | | | | | | 1967 | 49 |
| 83 | 0.06 | 0.15 | 3800 | 205 | 0.91 | 0.72 | 10900 | 1959 | 1966 TCPL | 52 |
| | | | | | | | | | 1960 LOCAL UTILITY | 55 |
| | | | | | | | | | 1964 | 56 |
| | | | | | | | | | 1967 GREAT CANADIAN OIL | 59 |
| | | | | | | | | | SANDS LIMITED | 60 |
| | | | | | | | | | 1967 GREAT CANADIAN OIL | 61 |
| | | | | | | | | | SANDS LIMITED | 62 |
| | | | | | | | | | 1964 | 65 |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU.FT | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| CAMPBELL-NAMAO (CONTINUED) | | | | | | | | | |
| BLAIRMORE E ASSOC | 31 | 0.80 | 0.05 | 23** | | | | | 1740 |
| BLAIR ASSOC (OTHER) | 11 | 0.80 | 0.05 | 9** | | | | | |
| BLAIRMORE SOLN | 8 | 0.60 | 0.05 | 4** | 23** | 13 | 1020* | 13 | |
| CARBON | | | | | | | | | |
| BASAL COLORADO | 4 | 0.85 | 0.05 | 3 | | 3 | 1020 | 3 | |
| GLAUCONITIC | 140 | 0.85 | 0.05 | 110 | 35 | 75 | 1120 | 84 | |
| MANNVILLE (OTHER) | 4 | 0.85 | 0.05 | 3 | | 3 | 1100 | 3 | |
| RUNDLE | 3 | 0.85 | 0.05 | 3 | | 3 | 1110 | 3 | |
| CAROLINE | | | | | | | | | |
| VIKING | 2 | 0.80 | 0.05 | 1 | | 1 | 1040* | 1 | |
| VIKING A ASSOC | 160 | 0.80 | 0.05 | 120 | 8 | 112 | 1040* | 116 | 40600 |
| BASAL MANNVILLE B | 15 | 0.85 | 0.10 | 12 | 2 | 10 | 1070 | 11 | 500 |
| BASAL MANNVILLE C | 16 | 0.85 | 0.10 | 12 | | 12 | 1070 | 13 | 500 |
| MANNVILLE (OTHER) | 25 | 0.90 | 0.10 | 20 | | 20 | 1040* | 21 | |
| RUNDLE | 13 | 0.85 | 0.15 | 10 | 1 | 9 | 1020* | 9 | |
| CARSON CREEK | | | | | | | | | |
| BEAVERHILL LAKE A | 210 | 0.85 | 0.15 | 150 | 14 | 136 | 1080* | 147 | 20390 |
| BEAVERHILL LAKE B | 110 | 0.85 | 0.15 | 80 | -11 | 91 | 1080* | 98 | 6980 |
| CARSON CREEK NORTH | | | | | | | | | |
| BH LK A ASSOC | 26 | 0.85 | 0.15 | 19 | | 19 | 1100* | 21 | 2880 |
| BH LK A SOLN | 110 | 0.45 | 0.20 | 38 | 5 | 33 | 1100* | 36 | |
| BH LK ASSOC (OTHER) | 7 | 0.85 | 0.15 | 5 | | 5 | 1100* | 6 | |
| BH LK B SOLN | 360 | 0.40 | 0.20 | 110 | 13 | 97 | 1100* | 107 | |
| CARSTAIRS | | | | | | | | | |
| BLAIRMORE | 16 | 0.85 | 0.15 | 11 | | 11 | 1100 | 12 | |
| ELKTON A | 1140 | 0.90 | 0.15 | 870 | 301 | 569 | 1070* | 609 | |
| RUNDLE ASSOC | 6 | 0.85 | 0.15 | 5 | | 5 | 1070* | 5 | |
| CASTOR | | | | | | | | | |
| VIKING A | 33 | 0.80 | 0.05 | 25 | 1 | 24 | 1040 | 25 | 20320 |
| MANNVILLE A | 16 | 0.80 | 0.05 | 12 | 2 | 10 | 1090 | 11 | 5300 |
| MANNVILLE (OTHER) | 2 | 0.85 | 0.05 | 1 | | 1 | 1090 | 1 | |
| CESSFORD | | | | | | | | | |
| VIKING H | 16 | 0.75 | 0.03 | 11 | 1 | 10 | 1020* | 10 | 6460 |
| VIKING I | 14 | 0.75 | 0.03 | 10 | | 10 | 1020* | 10 | 1100 |
| VIKING (OTHER) | 78 | 0.65 | 0.03 | 49 | 12 | 37 | 1060* | 39 | |
| BASAL COLORADO E | 120 | 0.80 | 0.04 | 90 | 48 | 42 | 1030* | 43 | 24430 |
| BSL COLORADO (OTHER) | 48 | 0.65 | 0.04 | 31 | 3 | 28 | 1030* | 29 | |
| BSL COLORADO A ASSOC | 890 | 0.85 | 0.04 | 730** | | | | | 135000 |
| BSL COLORADO A SOLN | 20 | 0.65 | 0.21 | 10** | 378** | 362 | 1030* | 373 | |
| GLAUCONITIC B | 15 | 0.75 | 0.05 | 11 | 1 | 10 | 1080* | 11 | 5810 |
| MANNVILLE G | 40 | 0.85 | 0.04 | 33 | 22 | 11 | 1000* | 11 | 5760 |
| MANNVILLE H | 71 | 0.85 | 0.04 | 58 | 28 | 30 | 1000* | 30 | 7010 |
| MANNVILLE I | 13 | 0.75 | 0.04 | 10 | 6 | 4 | 1000* | 4 | |
| MANNVILLE J | 32 | 0.85 | 0.04 | 26 | 15 | 11 | 1000* | 11 | 4870 |
| MANNVILLE V | 27 | 0.80 | 0.04 | 20 | 13 | 7 | 1000* | 7 | |
| MANNVILLE (OTHER) | 86 | 0.80 | 0.04 | 65 | 26 | 39 | 1000* | 39 | |
| MANNVILLE C ASSOC | 19 | 0.85 | 0.04 | 16 | | 16 | 1030* | 16 | 3930 |
| MANNVILLE C SOLN | 12 | 0.65 | 0.17 | 7 | 6 | 1 | 1000* | 1 | |
| CHAMBERS | | | | | | | | | |
| MANNVILLE | 6 | 0.85 | 0.10 | 4 | | 4 | 1030 | 4 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11<br>AVERAGE PAY THICKNESS FEET | 12<br>POROSITY FRACTION | 13<br>LIQUID SATURATION FRACTION | 14<br>INITIAL PRESSURE PSIA | 15<br>RESERVOIR TEMPERATURE °F | 16<br>COMPRESS-IBILITY FACTOR FRACTION | 17<br>RAW GAS SPECIFIC GRAVITY | 18<br>AVERAGE WELL DEPTH FEET | 19<br>DISCOVERY YEAR | 20<br>DATE LAST REVIEWED, DISPOSITION AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 30 | 0.19 | 0.20 | 1220 | 115 | 0.85 | 0.67 | 3620 | 1951 | 1969 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1964 CIGOL |
| | | | | | | | | | 1964 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 4740 | 1953 | 1970 CWNG |
| | | | | | | | | | 1964 |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1967 |
| 7 | 0.11 | 0.25 | 2500 | 165 | 0.83 | [illegible] | 8070 | 1957 | 1967 TCPL |
| 26 | 0.15 | 0.30 | 4260 | 185 | 0.92 | 0.78 | 9460 | 1958 | 1964 A&S |
| 27 | 0.15 | 0.30 | 4040 | 180 | 0.89 | 0.78 | 8900 | 1964 | 1965 |
| | | | | | | | | | 1965 TCPL |
| | | | | | | | | | 1965 A&S |
| 17 | 0.08 | 0.20 | 3790 | 200 | 0.85 | 0.97 | 8550 | 1961 | 1964 POOLS BEING CYCLED |
| 24 | 0.08 | 0.20 | 3790 | 200 | 0.85 | 0.97 | 8610 | 1957 | 1964 AND GAS SOLD TO NUL |
| | | | | | | | | | AND A&S |
| 10 | 0.09 | 0.90 | 3740 | 185 | 0.84 | 0.79 | 8580 | 1958 | 1969 |
| | | | | | | | 8630 | 1958 | 1965 INJ INTO CARSON CRK |
| | | | | | | | 8700 | 1958 | 1969 |
| | | | | | | | 8740 | 1958 | 1969 INJ INTO CARSON CRK |
| | | | | | | | | | 1967 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 8100 | 1958 | 1967 TCPL |
| | | | | | | | | | 1967 |
| [illegible] | 0.21 | 0.55 | 860 | 90 | 0.89 | 0.61 | 3160 | 1949 | 1969 TCPL |
| [illegible] | 0.20 | 0.65 | 1130 | 90 | 0.85 | 0.63 | 3500 | 1949 | 1969 LOCAL UTILITY |
| | | | | | | | | | 1969 |
| 6 | 0.21 | 0.45 | 1110 | 75 | 0.86 | 0.59 | 2630 | 1953 | 1968 TCPL |
| 15 | 0.21 | 0.45 | 1100 | 80 | 0.86 | 0.59 | 2730 | 1953 | 1968 |
| | | | | | | | | | 1968 TCPL |
| 8 | 0.24 | 0.40 | 1260 | 85 | 0.84 | 0.61 | 2970 | 1950 | 1968 TCPL |
| | | | | | | | | | 1968 TCPL |
| 10 | 0.27 | 0.40 | 1260 | 80 | 0.84 | 0.61 | 2860 | 1950 | 1968 |
| | | | | | | | 2870 | 1950 | 1968 TCPL |
| 6 | 0.17 | 0.50 | 1370 | 95 | 0.82 | 0.65 | 3570 | 1962 | 1968 TCPL |
| 13 | [illegible] | 0.50 | 1420 | 90 | 0.81 | 0.65 | 3390 | 1950 | 1968 TCPL |
| 14 | 0.25 | 0.45 | 1440 | 85 | 0.80 | 0.65 | 3070 | 1954 | 1968 TCPL |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 3340 | 1951 | 1970 TCPL |
| 10 | 0.23 | 0.45 | 1540 | 90 | 0.80 | 0.65 | 3400 | 1958 | 1968 TCPL |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 3800 | 1959 | 1969 TCPL |
| | | | | | | | | | 1968 TCPL |
| 6 | 0.24 | 0.35 | 1400 | 90 | 0.81 | 0.65 | 3320 | 1951 | 1968 |
| | | | | | | | | | 1968 TCPL |
| | | | | | | | | | 1967 |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU FT | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| CHAMBERS (CONTINUED) | | | | | | | | | |
| RUNDLE | 13 | 0.85 | 0.15 | 9 | | 9 | 1080 | 10 | |
| CHARLOTTE LAKE | | | | | | | | | |
| MANNVILLE | 2 | 0.75 | 0.05 | 1 | | 1 | 1000 | 1 | |
| CHERHILL | | | | | | | | | |
| VIKING | 6 | 0.80 | 0.05 | 4 | | 4 | 1060 | 4 | |
| MANNVILLE | 16 | 0.85 | 0.10 | 13 | | 13 | 1040 | 14 | |
| BANFF ASSOC | 9 | 0.85 | 0.10 | 7 | | 7 | 1060 | 7 | |
| CHESTERMERE | | | | | | | | | |
| RUNDLE A | 27 | 0.85 | 0.15 | 20 | | 20 | 1100 | 22 | 1100 |
| CHIGWELL | | | | | | | | | |
| MANNVILLE A | 46 | 0.85 | 0.10 | 35 | 16 | 19 | 1110 | 21 | |
| MANNVILLE (OTHER) | 10 | 0.75 | 0.10 | 7 | 1 | 6 | 1110 | 7 | |
| CHINOOK RIDGE | | | | | | | | | |
| CADOTTE 12-65-13 | 32 | 0.80 | 0.10 | 23 | | 23 | 1020 | 23 | 1100 |
| PEACE RIVER (OTHER) | 13 | 0.80 | 0.10 | 9 | | 9 | 1020 | 9 | |
| SPIRIT R 12-65-13 | 20 | 0.80 | 0.10 | 15 | | 15 | 1020 | 15 | 500 |
| CLIVE | | | | | | | | | |
| VIKING | 4 | 0.80 | 0.05 | 3 | | 3 | 990 | 3 | |
| MANNVILLE | 5 | 0.85 | 0.05 | 4 | | 4 | 1020 | 4 | |
| D-2 A ASSOC | 39 | 0.85 | 0.30 | 23 | | 23 | 1050* | 24 | 4240 |
| D-2 ASSOC (OTHER) | 1 | 0.85 | 0.30 | 1 | | 1 | 1050* | 1 | |
| D-2 SOLN | 38 | 0.40 | 0.55 | 7 | | 7 | 1050* | 7 | |
| D-3 A ASSOC | 33 | 0.75 | 0.30 | 18 | | 18 | 1050* | 19 | 3950 |
| D-3 A SOLN | 70 | 0.40 | 0.60 | 11 | | 11 | 1050* | 12 | |
| COLD LAKE | | | | | | | | | |
| COLONY A | 22 | 0.70 | 0.05 | 14 | 4 | 10 | 1000 | 10 | |
| MANNVILLE (OTHER) | 3 | 0.75 | 0.05 | 2 | 1 | 1 | 1000 | 1 | |
| COMREY | | | | | | | | | |
| 2WS | 5 | 0.80 | 0.05 | 4 | | 4 | 940 | 4 | |
| BOW ISLAND | 34 | 0.75 | 0.05 | 24 | 17 | 7 | 940 | 7 | 6980 |
| BOW ISLAND (OTHER) | 1 | 0.80 | 0.05 | 1 | | 1 | 940 | 1 | |
| UPPER MANNVILLE A | 16 | 0.90 | 0.05 | 14 | | 14 | 1000 | 14 | 1100 |
| JURASSIC | 1 | 0.80 | 0.05 | 1 | | 1 | 1000 | 1 | |
| CONNORSVILLE | | | | | | | | | |
| VIKING | 8 | 0.80 | 0.05 | 6 | 3 | 3 | 1000 | 3 | |
| LOWER MANNVILLE A | 52 | 0.85 | 0.05 | 42 | 4 | 38 | 1100 | 42 | 10110 |
| MANNVILLE (OTHER) | 10 | 0.85 | 0.05 | 8 | 2 | 6 | 1100 | 7 | |
| COUNTESS | | | | | | | | | |
| BOW ISLAND A | 34 | 0.80 | 0.05 | 26 | 6 | 20 | 1010* | 20 | 14490 |
| BOW ISLAND C | 17 | 0.80 | 0.05 | 13 | 1 | 12 | 1010* | 12 | 6080 |
| BOW ISLAND F | 15 | 0.85 | 0.05 | 12 | | 12 | 1010* | 12 | 2230 |
| BOW ISLAND (OTHER) | 22 | 0.80 | 0.05 | 16 | 1 | 15 | 1010* | 15 | |
| BASAL COLORADO A | 170 | 0.85 | 0.05 | 140 | 86 | 54 | 1010* | 55 | |
| BSL COLORADO (OTHER) | 5 | 0.90 | 0.05 | 5 | | 5 | 1010* | 5 | |
| MANNVILLE | 50 | 0.85 | 0.05 | 40 | 7 | 33 | 1020* | 34 | |
| BASAL QUARTZ B ASSOC | 12 | 0.85 | 0.05 | 10 | | 10 | 1020* | 10 | 1370 |
| MANN ASSOC (OTHER) | 5 | 0.85 | 0.05 | 4 | | 4 | 1020* | 4 | |
| MISS ASSOC | 3 | 0.80 | 0.10 | 2 | | 2 | 1030* | 2 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS | |
| | | | | | | | | | | 1 |
| | | | | | | | | | 1967 | 2 |
| | | | | | | | | | | 3 |
| | | | | | | | | | | 4 |
| | | | | | | | | | 1965 CANADIAN FORCES BASE | 5 |
| | | | | | | | | | AT COLD LAKE | 6 |
| | | | | | | | | | | 7 |
| | | | | | | | | | | 8 |
| | | | | | | | | | 1968 | 9 |
| | | | | | | | | | 1968 | 10 |
| | | | | | | | | | 1968 | 11 |
| | | | | | | | | | | 12 |
| | | | | | | | | | | 13 |
| 42 | 0.10 | 0.15 | 2790 | 155 | 0.80 | 0.76 | 6820 | 1968 | 1969 | 14 |
| | | | | | | | | | | 15 |
| | | | | | | | | | | 16 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 5160 | 1952 | 1968 TCPL | 17 |
| | | | | | | | | | 1968 TCPL | 18 |
| | | | | | | | | | | 19 |
| | | | | | | | | | | 20 |
| 23 | 0.20 | 0.30 | 3300 | 230 | 0.85 | 0.80 | 9200 | 1956 | 1961 CONSIDERED BEYOND | 21 |
| | | | | | | | | | 1961 ECONOMIC REACH | 22 |
| 32 | 0.20 | 0.30 | 3400 | 235 | 0.86 | 0.80 | 9460 | 1956 | 1961 | 23 |
| | | | | | | | | | | 24 |
| | | | | | | | | | | 25 |
| | | | | | | | | | 1966 | 26 |
| | | | | | | | | | 1966 | 27 |
| 20 | 0.06 | 0.15 | 2480 | 150 | 0.73 | 0.75 | 6040 | 1951 | 1967 | 28 |
| | | | | | | | | | 1968 | 29 |
| | | | | | | | | | | 30 |
| | | | | | | | | | 1968 | 31 |
| 20 | 0.06 | 0.15 | 2550 | 150 | 0.73 | 0.81 | 6140 | 1952 | 1967 | 32 |
| | | | | | | | 6150 | 1952 | 1968 | 33 |
| | | | | | | | | | | 34 |
| | | | | | | | | | | 35 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 900 | 1952 | 1970 LOCAL UTILITY | 36 |
| | | | | | | | | | 1966 LOCAL UTILITY | 37 |
| | | | | | | | | | | 38 |
| | | | | | | | | | | 39 |
| | | | | | | | | | 1960 | 40 |
| 16 | 0.25 | 0.50 | 770 | 80 | 0.92 | 0.59 | 2480 | 1952 | 1968 CMG | 41 |
| | | | | | | | | | 1960 | 42 |
| 33 | 0.21 | 0.35 | 990 | 80 | 0.88 | 0.57 | 2750 | 1968 | 1968 CMG | 43 |
| | | | | | | | | | | 44 |
| | | | | | | | | | 1960 | 45 |
| | | | | | | | | | | 46 |
| | | | | | | | | | | 47 |
| | | | | | | | | | 1964 TCPL | 48 |
| 11 | 0.16 | 0.35 | 1410 | 105 | 0.85 | 0.61 | 3650 | 1956 | 1965 TCPL | 49 |
| | | | | | | | | | 1965 TCPL | 50 |
| | | | | | | | | | | 51 |
| | | | | | | | | | | 52 |
| 6 | 0.23 | 0.50 | 1040 | 85 | 0.87 | 0.60 | 2890 | 1951 | 1968 TCPL | 53 |
| 7 | 0.22 | 0.50 | 1040 | 85 | 0.87 | 0.60 | 2860 | 1955 | 1968 TCPL | 54 |
| 13 | 0.27 | 0.50 | 1170 | 85 | 0.86 | 0.60 | 2830 | 1967 | 1968 | 55 |
| | | | | | | | | | 1968 TCPL | 56 |
| | | | | | | | | | | 57 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 3500 | 1951 | 1968 TCPL | 58 |
| | | | | | | | | | 1968 | 59 |
| | | | | | | | | | 1964 TCPL | 60 |
| 13 | 0.21 | 0.30 | 1470 | 110 | 0.82 | 0.67 | 4280 | 1958 | 1964 | 61 |
| | | | | | | | | | 1968 | 62 |
| | | | | | | | | | | 63 |
| | | | | | | | | | 1961 | 64 |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU FT | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| CRAIGEND | | | | | | | | | |
| PELICAN | 3 | 0.75 | 0.05 | 2 | | 2 | 1000 | 2 | |
| GRAND RAPIDS C | 18 | 0.65 | 0.05 | 11 | | 11 | 1000 | 11 | 12150 |
| GRAND RAPIDS F | 19 | 0.65 | 0.05 | 12 | | 12 | 1000 | 12 | 10120 |
| MCMURRAY B | 24 | 0.70 | 0.05 | 16 | | 16 | 1000 | 16 | 11470 |
| MANNVILLE (OTHER) | 61 | 0.75 | 0.05 | 43 | 1 | 42 | 1000 | 42 | |
| MANNVILLE ASSOC | 1 | 0.75 | 0.05 | 1 | | 1 | 1000 | 1 | |
| GROSMONT A | 200 | 0.75 | 0.05 | 140 | 7 | 133 | 1000 | 133 | 87050 |
| CRAIG LAKE | | | | | | | | | |
| VIKING | 1 | 0.75 | 0.05 | 1 | | 1 | 1000 | 1 | |
| CROSSFIELD | | | | | | | | | |
| BELLY RIVER | 2 | 0.75 | 0.05 | 2 | | 2 | 1000* | 2 | |
| CARDIUM SOLN | 75 | 0.10 | 0.45 | 4 | 1 | 3 | 1140* | 3 | |
| BASAL QUARTZ A | 81 | 0.85 | 0.10 | 62 | 3 | 59 | 1020* | 60 | 12160 |
| BLAIRMORE (OTHER) | 35 | 0.85 | 0.10 | 27 | 2 | 25 | 1020* | 26 | |
| RUNDLE A | 1240 | 0.90 | 0.10 | 1000 | 236 | 764 | 1070* | 817 | |
| RUNDLE B | 900 | 0.85 | 0.15 | 650 | 250 | 400 | 1070* | 428 | 21220 |
| RUNDLE D | 13 | 0.85 | 0.10 | 10 | | 10 | 1020* | 10 | 500 |
| WABAMUN A | 1600 | 0.75 | 0.50 | 600 | 138 | 462 | 980 | 453 | |
| CROSSFIELD EAST | | | | | | | | | |
| BLAIRMORE | 7 | 0.85 | 0.10 | 6 | | 6 | 1020* | 6 | |
| ELKTON A | 150 | 0.90 | 0.12 | 120 | 47 | 73 | 1140* | 83 | |
| ELKTON C | 32 | 0.85 | 0.10 | 24 | | 24 | 1140* | 27 | 1100 |
| WABAMUN A | 1590 | 0.85 | 0.55 | 610 | 44 | 566 | 970 | 549 | 55510 |
| DIXONVILLE | | | | | | | | | |
| MANNVILLE | 9 | 0.85 | 0.05 | 7 | | 7 | 980 | 7 | |
| TRIASSIC | 8 | 0.90 | 0.05 | 7 | | 7 | 1030 | 7 | |
| LEDUC | 4 | 0.85 | 0.05 | 3 | | 3 | 1070 | 3 | |
| DONALDA | | | | | | | | | |
| VIKING | 33 | 0.75 | 0.05 | 24 | | 24 | 970 | 23 | |
| MANNVILLE | 11 | 0.85 | 0.05 | 9 | | 9 | 980 | 9 | |
| DOWLING LAKE | | | | | | | | | |
| MANNVILLE | 5 | 0.80 | 0.05 | 3 | 2 | 1 | 1030* | 1 | |
| DRUMHELLER | | | | | | | | | |
| VIKING | 3 | 0.85 | 0.05 | 2 | | 2 | 1080 | 2 | |
| MANNVILLE H | 16 | 0.85 | 0.10 | 12 | 3 | 9 | 1080 | 10 | 2360 |
| MANNVILLE (OTHER) | 42 | 0.85 | 0.05 | 33 | 1 | 32 | 1080 | 35 | |
| MANNVILLE F ASSOC | 27 | 0.85 | 0.05 | 21 | 2 | 19 | 1080 | 21 | 37440 |
| MANN ASSOC (OTHER) | 3 | 0.80 | 0.05 | 2 | | 2 | 1080 | 2 | |
| BANFF | 3 | 0.80 | 0.10 | 2 | | 2 | 1080 | 2 | |
| DUHAMEL | | | | | | | | | |
| VIKING | 4 | 0.90 | 0.05 | 4 | | 4 | 1000 | 4 | |
| MANNVILLE | 5 | 0.85 | 0.05 | 4 | 1 | 3 | 1030 | 3 | |
| D-2 ASSOC | 2 | 0.90 | 0.10 | 2 | 1 | 1 | 1100 | 1 | |
| D-3 SOLN | 6 | 0.50 | 0.55 | 1 | 1 | □ 1 | 1100 | □ 1 | |
| DUNVEGAN | | | | | | | | | |
| CADOTTE | 9 | 0.75 | 0.05 | 7 | | 7 | 1010 | 7 | |
| DEBOLT | 3 | 0.90 | 0.05 | 3 | | 3 | 1040 | 3 | |
| DUVERNAY | | | | | | | | | |
| VIKING | 4 | 0.80 | 0.05 | 3 | 2 | 1 | 1000* | 1 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS | Line |
| | | | | | | | | | 1967 | 2 |
| 8 | 0.31 | 0.50 | 380 | 80 | 0.95 | 0.57 | 1200 | 1966 | 1969 TCPL | 3 |
| 10 | 0.35 | 0.50 | 380 | 80 | 0.95 | 0.57 | 1230 | 1966 | 1969 TCPL | 4 |
| 8 | 0.29 | 0.30 | 430 | 75 | 0.94 | 0.56 | 1230 | 1966 | 1970 | 5 |
| | | | | | | | | | 1969 TCPL | 7 |
| | | | | | | | | | 1969 | 8 |
| 31 | 0.11 | 0.55 | 410 | 75 | 0.94 | 0.57 | 1660 | 1949 | 1969 TCPL | 9 |
| | | | | | | | | | 1968 LOCAL UTILITY | 12 |
| | | | | | | | | | 1969 | 15 |
| | | | | | | | | | 1970 TCPL | 16 |
| 9 | 0.11 | 0.30 | 2890 | 150 | 0.82 | 0.70 | 7330 | 1957 | 1966 WESTCOAST AND TCPL | 17 |
| | | | | | | | | | 1966 TCPL | 18 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 8410 | 1956 | 1969 A&S AND TCPL | 20 |
| 71 | 0.08 | 0.15 | 3040 | 165 | 0.88 | 0.70 | 7440 | 1957 | 1967 WESTCOAST AND TCPL | 21 |
| 44 | 0.08 | 0.20 | 3310 | 180 | 0.88 | 0.71 | 8200 | 1951 | 1964 | 22 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 8500 | 1954 | 1970 WESTCOAST AND TCPL | 23 |
| | | | | | | | | | 1968 | 26 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 7490 | 1960 | 1968 TCPL | 27 |
| 48 | 0.09 | 0.20 | 2780 | 170 | 0.82 | 0.74 | 7590 | 1967 | 1968 | 28 |
| 51 | 0.05 | 0.20 | 3630 | 180 | 0.72 | 0.91 | 9000 | 1960 | 1968 TCPL | 29 |
| | | | | | | | | | 1962 CONSIDERED BEYOND | 32 |
| | | | | | | | | | 1962 ECONOMIC REACH | 33 |
| | | | | | | | | | 1962 | 34 |
| | | | | | | | | | 1970 | 37 |
| | | | | | | | | | 1969 | 38 |
| | | | | | | | | | 1960 LOCAL UTILITY | 41 |
| | | | | | | | | | 1967 | 44 |
| 15 | 0.16 | 0.45 | 1450 | 125 | 0.84 | 0.66 | 4370 | 1961 | 1968 TCPL | 45 |
| | | | | | | | | | 1966 TCPL | 46 |
| 9 | 0.20 | 0.25 | 1430 | 120 | 0.82 | 0.68 | 4220 | 1950 | 1968 TCPL | 47 |
| | | | | | | | | | 1966 | 49 |
| | | | | | | | | | 1963 TCPL | 50 |
| | | | | | | | | | 1965 INJECTED INTO D-3 | 53 |
| | | | | | | | | | 1965 INJECTED INTO D-3 | 54 |
| | | | | | | | | | 1957 INJECTED INTO D-3 | 55 |
| | | | | | | | | | 1966 INJECTED | 56 |
| | | | | | | | | | 1963 CONSIDERED BEYOND | 59 |
| | | | | | | | | | 1963 ECONOMIC REACH | 60 |
| | | | | | | | | | 1970 WESTERN MINERALS AND | 63 |
| | | | | | | | | | LOCAL UTILITY | 64 |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU.FT. | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| EAGLESHAM | | | | | | | | | |
| BLUESKY | 5 | 0.85 | 0.05 | 4 | | 4 | 1000 | 4 | |
| CADOMIN ASSOC | 7 | 0.85 | 0.05 | 5 | | 5 | 1060 | 5 | |
| DEBOLT A | 17 | 0.85 | 0.05 | 14 | | 14 | 1110 | 16 | 2040 |
| DEBOLT B | 19 | 0.85 | 0.05 | 15 | | 15 | 1110 | 17 | 1100 |
| DEBOLT C | 26 | 0.85 | 0.05 | 21 | | 21 | 1110 | 23 | 1100 |
| EDSON | | | | | | | | | |
| GETHING A | 210 | 0.85 | 0.10 | 160 | 13 | 147 | 1050 | 154 | 11450 |
| ELK A,SHUN A,&SHUN B | 2350 | 0.90 | 0.10 | 1900 | 296 | 1604 | 1030* | 1652 | 121800 |
| ELKTON 26-51-19 | 22 | 0.85 | 0.10 | 17 | | 17 | 1030* | 18 | 1100 |
| ELKTON 33-51-19 | 23 | 0.85 | 0.10 | 18 | | 18 | 1030* | 19 | 1100 |
| RUNDLE (OTHER) | 5 | 0.85 | 0.10 | 4 | | 4 | 1030* | 4 | |
| EDWAND | | | | | | | | | |
| MANNVILLE | 4 | 0.80 | 0.05 | 3 | | 3 | 1000 | 3 | |
| NISKU | 2 | 0.85 | 0.05 | 1 | | 1 | 1000 | 1 | |
| ELK POINT | | | | | | | | | |
| MANNVILLE | 3 | 0.80 | 0.05 | 2 | 1 | 1 | 990* | 1 | |
| ELLERSLIE | | | | | | | | | |
| BLAIRMORE ASSOC | 2 | 0.75 | 0.15 | 1 | | 1 | 1000 | 1 | |
| ELNORA | | | | | | | | | |
| UPPER MANNVILLE A | 16 | 0.75 | 0.05 | 12 | | 12 | 1100 | 13 | |
| LOWER MANNVILLE A | 25 | 0.75 | 0.05 | 18 | | 18 | 1100 | 20 | |
| MANNVILLE (OTHER) | 3 | 0.80 | 0.05 | 2 | | 2 | 1100 | 2 | |
| ENCHANT | | | | | | | | | |
| MILK RIVER | 5 | 0.75 | 0.05 | 3 | 1 | 2 | 1000* | 2 | |
| BOW ISLAND A | 15 | 0.75 | 0.05 | 11 | 1 | 10 | 1000* | 10 | 28780 |
| BOW ISLAND (OTHER) | 15 | 0.85 | 0.05 | 12 | 5 | 7 | 1000* | 7 | |
| BASAL COLORADO | 1 | 0.75 | 0.05 | 1 | | 1 | 1000* | 1 | |
| UPPER MANNVILLE A | 13 | 0.85 | 0.05 | 11 | 4 | 7 | 1000* | 7 | 4010 |
| MANNVILLE (OTHER) | 11 | 0.85 | 0.10 | 8 | 1 | 7 | 1000* | 7 | |
| JURASSIC | 2 | 0.75 | 0.10 | 2 | | 2 | 1000* | 2 | |
| RUNDLE | 5 | 0.85 | 0.10 | 4 | 2 | 2 | 1000* | 2 | |
| EQUITY | | | | | | | | | |
| MANNVILLE | 4 | 0.80 | 0.05 | 3 | | 3 | 1130* | 3 | |
| LOWER MANN A & PEK A | 53 | 0.75 | 0.10 | 37 | 4 | 33 | 1130* | 37 | 8720 |
| ERSKINE | | | | | | | | | |
| VIKING | 4 | 0.80 | 0.05 | 3 | | 3 | 1040 | 3 | |
| BLAIRMORE | 18 | 0.80 | 0.10 | 13 | 5 | 8 | 1090 | 9 | |
| D-2 SOLN | 1 | 0.65 | 0.35 | 1 | | 1 | 1100 | 1 | |
| D-3 | 1 | 0.85 | 0.20 | 1 | | 1 | 1070 | 1 | |
| D-3 ASSOC | 34 | 0.90 | 0.20 | 25** | | | | | 2760 |
| D-3 SOLN | 19 | 0.50 | 0.75 | 2** | 4** | 23 | 1110 | 26 | |
| ESTHER | | | | | | | | | |
| BELLY RIVER A | 21 | 0.75 | 0.05 | 15 | | 15 | 990 | 15 | 31050 |
| MANNVILLE | 1 | 0.85 | 0.05 | 1 | | 1 | 1010 | 1 | |
| BANFF A | 21 | 0.85 | 0.05 | 17 | 5 | 12 | 1000 | 12 | 1600 |
| BANFF (OTHER) | 3 | 0.85 | 0.05 | 2 | | 2 | 1000 | 2 | |
| ETHEL LAKE | | | | | | | | | |
| MANNVILLE | 3 | 0.80 | 0.05 | 2 | 1 | 1 | 1000 | 1 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1965 |
| 11 | 0.18 | 0.25 | 1870 | 135 | 0.85 | 0.64 | 4480 | 1952 | 1966 |
| 17 | 0.20 | 0.20 | 1980 | 125 | 0.83 | 0.64 | 4700 | 1959 | 1965 |
| 23 | 0.20 | 0.20 | 2000 | 125 | 0.81 | 0.65 | 4700 | 1959 | 1965 |
| 27 | 0.10 | 0.25 | 3360 | 180 | 0.88 | 0.68 | 8400 | 1963 | 1969 TCPL |
| 22 | 0.10 | 0.10 | 3880 | 225 | 0.94 | 0.63 | 9380 | 1962 | 1969 TCPL |
| 31 | 0.08 | 0.10 | 3990 | 210 | 0.94 | 0.63 | 10120 | 1964 | 1966 |
| 24 | 0.10 | 0.10 | 3880 | 240 | 0.94 | 0.64 | 10300 | 1953 | 1970 |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1966 LOCAL UTILITY |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1964 LOCAL UTILITY |
| | | | | | | | | | 1966 EDMONTON LIQUID GAS |
| | | CONFIDENTIAL | | | | | | | 1969 |
| | | CONFIDENTIAL | | | | | | | 1969 |
| | | | | | | | | | 1953 |
| | | | | | | | | | 1964 TCPL |
| 2 | 0.15 | 0.30 | 950 | 80 | 0.89 | 0.59 | 2470 | 1960 | 1967 TCPL |
| | | | | | | | | | 1967 TCPL |
| | | | | | | | | | 1962 |
| 5 | 0.20 | 0.35 | 1580 | 90 | 0.81 | 0.66 | 3300 | 1953 | 1968 TCPL |
| | | | | | | | | | 1961 TCPL |
| | | | | | | | | | 1961 |
| | | | | | | | | | 1966 TCPL |
| | | | | | | | | | 1968 TCPL |
| 22 | 0.08 | 0.35 | 1620 | 125 | 0.83 | 0.67 | 5420 | 1962 | 1970 TCPL |
| | | | | | | | | | 1962 |
| | | | | | | | | | 1966 TCPL |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1968 |
| 31 | 0.06 | 0.20 | 2210 | 145 | 0.71 | 0.70 | 5350 | 1953 | 1969 |
| | | | | | | | 5390 | 1953 | 1966 TCPL |
| 3 | 0.31 | 0.35 | 330 | 55 | 0.95 | 0.58 | 800 | 1956 | 1964 |
| | | | | | | | | | 1969 |
| 26 | 0.19 | 0.30 | 1180 | 85 | 0.87 | 0.59 | 2770 | 1965 | 1966 TCPL |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1967 LOCAL EXPERIMENTAL PROJECT |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU.FT. | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| ETZIKOM | | | | | | | | | |
| BOW ISLAND A | 68 | 0.75 | 0.05 | 48 | 36 | 12 | 930 | 11 | |
| MANNVILLE | 2 | 0.75 | 0.05 | 1 | | 1 | 1010 | 1 | |
| EXCELSIOR | | | | | | | | | |
| VIKING | 8 | 0.80 | 0.05 | 7 | 3 | 4 | 1000 | 4 | |
| MANNVILLE | 1 | 0.80 | 0.10 | 1 | | 1 | 970 | 1 | |
| MANNVILLE A ASSOC | 38 | 0.90 | 0.05 | 33 | | 33 | 970 | 32 | 3270 |
| FAIRYDELL-BON ACCORD | | | | | | | | | |
| VIKING A | 110 | 0.80 | 0.05 | 88 | 43 | 45 | 1020 | 46 | |
| VIKING (OTHER) | 8 | 0.80 | 0.05 | 6 | 1 | 5 | 1020 | 5 | |
| MANNVILLE | 14 | 0.80 | 0.05 | 11 | 3 | 8 | 990 | 8 | |
| BASAL MANN C ASSOC | 17 | 0.80 | 0.10 | 12 | 1 | 11 | 990 | 11 | 1430 |
| MANN ASSOC (OTHER) | 1 | 0.80 | 0.10 | 1 | | 1 | 990 | 1 | |
| FENN-BIG VALLEY | | | | | | | | | |
| VIKING | 19 | 0.80 | 0.90 | 2 | 1 | 1 | 1000* | 1 | |
| D-2 A SOLN | 150 | 0.65 | 0.85 | 15 | 8 | 7 | 1110* | 8 | |
| D-3 SOLN | 9 | 0.60 | 0.85 | 1 | 1 | □ 1 | 1110* | □ 1 | |
| FERRIER | | | | | | | | | |
| BELLY RIVER SOLN | 4 | 0.65 | 0.40 | 2 | | 2 | 960 | 2 | |
| CARDIUM | 8 | 0.80 | 0.10 | 6 | | 6 | 1000 | 6 | |
| CARDIUM D ASSOC | 120 | 0.85 | 0.10 | 90** | | | | | 8860 |
| CARDIUM D SOLN | 100 | 0.65 | 0.20 | 54** | 5** | 139 | 1000 | 139 | |
| CARDIUM E ASSOC | 410 | 0.85 | 0.10 | 310** | | | | | 12680 |
| CARDIUM E SOLN | 190 | 0.65 | 0.20 | 99** | 14** | 395 | 1000 | 395 | |
| CARDIUM SOLN (OTHER) | 6 | 0.65 | 0.25 | 3 | 1 | 2 | 1000 | 2 | |
| VIKING A SOLN | 31 | 0.65 | 0.25 | 15 | 4 | 11 | 1130 | 12 | |
| RUNDLE | 2 | 0.80 | 0.10 | 2 | | 2 | 1100 | 2 | |
| BANFF | 8 | 0.85 | 0.10 | 6 | | 6 | 1100 | 7 | |
| FIGURE LAKE | | | | | | | | | |
| VIKING | 4 | 0.75 | 0.05 | 3 | | 3 | 960 | 3 | |
| MANNVILLE | 13 | 0.80 | 0.05 | 10 | | 10 | 1000 | 10 | |
| D-2 B | 13 | 0.85 | 0.05 | 11 | 1 | 10 | 1000 | 10 | 6700 |
| D-2 (OTHER) | 12 | 0.85 | 0.05 | 8 | 1 | 7 | 1000 | 7 | |
| FLAT | | | | | | | | | |
| MANNVILLE | 22 | 0.80 | 0.05 | 17 | 1 | 16 | 1020 | 16 | |
| WABAMUN A | 156 | 0.80 | 0.05 | 119 | 5 | 114 | 1040 | 119 | 32650 |
| FOREMOST | | | | | | | | | |
| BOW ISLAND | 31 | 0.85 | 0.05 | 27 | 9 | 18 | 950 | 17 | 10400 |
| FORESTBURG | | | | | | | | | |
| VIKING | 2 | 0.85 | 0.05 | 2 | | 2 | 1010 | 2 | |
| MANNVILLE | 1 | 0.80 | 0.05 | 1 | | 1 | 1000 | 1 | |
| FORT KENT | | | | | | | | | |
| MANNVILLE | 5 | 0.75 | 0.05 | 4 | 2 | 2 | 980 | 2 | |
| FOX CREEK | | | | | | | | | |
| VIKING A | 97 | 0.75 | 0.05 | 69 | 5 | 64 | 1110 | 71 | 21790 |
| SPIRIT RIVER | 7 | 0.80 | 0.05 | 5 | | 5 | 1180 | 6 | |
| CADOMIN | 46 | 0.85 | 0.05 | 37 | 1 | 36 | 1160 | 42 | |
| TRIASSIC | 3 | 0.90 | 0.10 | 2 | | 2 | 1160 | 2 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS | |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 2230 | 1951 | 1967 SOUTH ALBERTA PIPE | 2 |
| | | | | | | | | | LINES | 3 |
| | | | | | | | | | 1961 | 4 |
| | | | | | | | | | 1953 CIGOL AND PLAINS- | 7 |
| | | | | | | | | | WESTERN GAS & ELEC | 8 |
| | | | | | | | | | 1969 | 9 |
| 24 | 0.20 | 0.35 | 1140 | 80 | 0.87 | 0.63 | 3450 | 1953 | 1953 | 10 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 2680 | 1950 | 1968 NUL | 13 |
| | | | | | | | | | 1963 NUL | 14 |
| | | | | | | | | | 1965 NUL | 15 |
| 25 | 0.20 | 0.30 | 1060 | 105 | 0.88 | 0.64 | 3470 | 1965 | 1969 NUL | 16 |
| | | | | | | | | | 1965 | 18 |
| | | | | | | | | | 1961 CWNG | 21 |
| | | | | | | | 5290 | 1950 | 1966 CWNG | 22 |
| | | | | | | | | | 1966 CWNG | 23 |
| | | | | | | | | | 1969 | 26 |
| | | | | | | | | | 1968 | 27 |
| 9 | 0.16 | 0.10 | 3170 | 160 | 0.80 | 0.75 | 6710 | 1965 | 1969 | 28 |
| | | | | | | | 6870 | 1965 | 1969 TCPL | 29 |
| 22 | 0.16 | 0.10 | 3170 | 150 | 0.79 | 0.75 | 6780 | 1965 | 1969 | 31 |
| | | | | | | | 7010 | 1965 | 1969 TCPL | 32 |
| | | | | | | | | | 1969 TCPL | 33 |
| | | | | | | | 8190 | 1955 | 1966 A&S | 34 |
| | | | | | | | | | 1960 | 35 |
| | | | | | | | | | 1967 | 37 |
| | | | | | | | | | 1966 | 40 |
| | | | | | | | | | 1966 TCPL | 41 |
| 13 | 0.14 | 0.45 | 630 | 180 | 0.92 | 0.57 | 2260 | 1957 | 1966 TCPL | 42 |
| | | | | | | | | | 1966 TCPL | 43 |
| | | | | | | | | | 1968 LOCAL UTILITY | 46 |
| 28 | 0.23 | 0.50 | 490 | 70 | 0.93 | 0.58 | 1870 | 1956 | 1968 TCPL | 47 |
| 7 | 0.24 | 0.20 | 690 | 70 | 0.92 | 0.58 | 2080 | 1916 | 1953 CWNG | 50 |
| | | | | | | | | | 1962 | 53 |
| | | | | | | | | | 1968 LOCAL UTILITY | 54 |
| | | | | | | | | | 1966 LOCAL UTILITY | 57 |
| 11 | 0.15 | 0.40 | 1480 | 140 | 0.85 | 0.67 | 5620 | 1957 | 1967 A&S | 60 |
| | | | | | | | | | 1967 | 61 |
| | | | | | | | | | 1967 A&S | 62 |
| | | | | | | | | | 1967 | 63 |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU.FT | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| FOX CREEK WEST | | | | | | | | | |
| CADOMIN | 15 | 0.85 | 0.05 | 12 | | 12 | 1160 | 14 | |
| GARRINGTON | | | | | | | | | |
| MANNVILLE | 12 | 0.85 | 0.10 | 9 | | 9 | 1010 | 9 | |
| MANNVILLE ASSOC | 3 | 0.90 | 0.15 | 2 | | 2 | 1010 | 2 | |
| RUNDLE | 2 | 0.85 | 0.10 | 1 | | 1 | 1020 | 1 | |
| LEDUC 23-35-4 | 23 | 0.85 | 0.20 | 15 | | 15 | 1020 | 15 | 500 |
| LEDUC (OTHER) | 7 | 0.85 | 0.20 | 5 | 1 | 4 | 1020 | 4 | |
| LEDUC ASSOC 36-35-4 | 15 | 0.85 | 0.20 | 10 | | 10 | 1020 | 10 | 500 |
| GHOST PINE | | | | | | | | | |
| VIKING | 8 | 0.80 | 0.05 | 6 | | 6 | 1020 | 6 | |
| UPPER MANN C & U | 30 | 0.80 | 0.10 | 22 | 5 | 17 | 1030 | 18 | 4200 |
| UPPER MANN G & P | 42 | 0.80 | 0.10 | 30 | 22 | 8 | 1030 | 8 | 11300 |
| UPPER MANNVILLE Q | 27 | 0.80 | 0.10 | 20 | | 20 | 1030 | 21 | 2390 |
| UPPER MANNVILLE W | 15 | 0.80 | 0.15 | 10 | 2 | 8 | 1030 | 8 | 5490 |
| LOWER MANNVILLE F | 19 | 0.85 | 0.10 | 14 | 3 | 11 | 1030 | 11 | 1940 |
| MANNVILLE (OTHER) | 140 | 0.80 | 0.10 | 100 | 20 | 80 | 1030 | 82 | |
| MANNVILLE ASSOC | 23 | 0.75 | 0.15 | 15 | 3 | 12 | 1050 | 13 | |
| PEKISKO B | 17 | 0.80 | 0.10 | 12 | | 12 | 1070 | 13 | 6520 |
| RUNDLE (OTHER) | 10 | 0.80 | 0.10 | 8 | 4 | 4 | 1070 | 4 | |
| GILBY | | | | | | | | | |
| CARDIUM | 2 | 0.85 | 0.10 | 2 | | 2 | 1000 | 2 | |
| VIKING ASSOC | 1 | 0.80 | 0.05 | 1 | | 1 | 1080* | 1 | |
| BASAL MANNVILLE D | 33 | 0.80 | 0.15 | 22 | 8 | 14 | 1080* | 15 | 2360 |
| MANNVILLE (OTHER) | 42 | 0.85 | 0.15 | 31 | | 31 | 1080* | 33 | |
| MANNVILLE ASSOC | 4 | 0.80 | 0.15 | 3 | | 3 | 1080* | 3 | |
| BASAL MANN A & JUR D | 230 | 0.85 | 0.10 | 180 | 36 | 144 | 1080* | 156 | 5860 |
| BASAL MANN H & JUR E | 150 | 0.80 | 0.10 | 110 | 10 | 100 | 1080* | 108 | 7840 |
| JURASSIC A | 75 | 0.80 | 0.04 | 58 | 6 | 52 | 1080* | 56 | 6050 |
| JURASSIC C | 23 | 0.80 | 0.04 | 18 | 15 | 3 | 1080* | 3 | |
| JURASSIC (OTHER) | 8 | 0.80 | 0.05 | 6 | | 6 | 1080* | 6 | |
| JURASSIC B ASSOC | 18 | 0.75 | 0.04 | 13 | | 13 | 1080* | 14 | 1220 |
| RUNDLE C | 260 | 0.85 | 0.05 | 210 | 88 | 122 | 1080* | 132 | 8070 |
| RUNDLE D | 150 | 0.85 | 0.05 | 120 | 48 | 72 | 1080* | 78 | 11240 |
| RUNDLE H | 16 | 0.85 | 0.05 | 13 | | 13 | 1080* | 14 | 2420 |
| RUNDLE (OTHER) | 17 | 0.85 | 0.05 | 13 | | 13 | 1080* | 14 | |
| WABAMUN | 7 | 0.90 | 0.20 | 5 | | 5 | 1170 | 6 | |
| GLENEVIS | | | | | | | | | |
| MANNVILLE | 16 | 0.80 | 0.10 | 12 | | 12 | 1040 | 12 | |
| GLEN PARK | | | | | | | | | |
| MANNVILLE | 6 | 0.80 | 0.05 | 4 | | 4 | 1140 | 5 | |
| D-3 SOLN | 16 | 0.65 | 0.15 | 9 | 2 | 7 | 1250 | 9 | |
| GOLD CREEK | | | | | | | | | |
| SPIRIT RIVER A | 58 | 0.85 | 0.05 | 47 | 1 | 46 | 1050 | 48 | 3940 |
| BLUESKY-GETHING A | 39 | 0.80 | 0.05 | 30 | 1 | 29 | 1050 | 30 | 8500 |
| GETHING | 4 | 0.85 | 0.10 | 3 | | 3 | 1050 | 3 | |
| CADOMIN B | 25 | 0.85 | 0.05 | 20 | | 20 | 1110* | 22 | 2030 |
| WABAMUN A | 410 | 0.80 | 0.30 | 230 | 2 | 228 | 1040* | 237 | 9400 |
| WABAMUN B | 92 | 0.80 | 0.30 | 51 | | 51 | 1040* | 53 | 1100 |
| GOLDEN SPIKE | | | | | | | | | |
| VIKING | 8 | 0.80 | 0.05 | 6 | 1 | 5 | 1050 | 5 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1964 |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1964 |
| 125 | 0.05 | 0.20 | 3760 | 220 | 0.94 | 0.75 | 10010 | 1954 | 1964 |
| | | | | | | | | | 1964 TCPL |
| 85 | 0.05 | 0.20 | 3700 | 220 | 0.95 | 0.77 | 9880 | 1956 | 1964 |
| | | | | | | | | | 1967 |
| 11 | 0.20 | 0.35 | 1540 | 115 | 0.81 | 0.70 | 4630 | 1964 | 1967 TCPL |
| 6 | 0.20 | 0.35 | 1510 | 120 | 0.81 | 0.69 | 4580 | 1964 | 1967 TCPL |
| 18 | 0.20 | 0.35 | 1520 | 125 | 0.81 | 0.67 | 4780 | 1955 | 1967 TCPL |
| 6 | 0.18 | 0.50 | 1520 | 110 | 0.75 | 0.76 | 4580 | 1963 | 1967 TCPL |
| 18 | 0.20 | 0.45 | 1550 | 125 | 0.82 | 0.68 | 4850 | 1955 | 1969 TCPL |
| | | | | | | | | | 1967 TCPL |
| | | | | | | | | | 1967 TCPL |
| 15 | 0.05 | 0.30 | 1620 | 125 | 0.82 | 0.69 | 5060 | 1962 | 1967 |
| | | | | | | | | | 1967 TCPL |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1965 |
| 27 | 0.11 | 0.30 | 2250 | 160 | 0.83 | 0.70 | 6930 | 1962 | 1966 TCPL |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1967 |
| 53 | 0.14 | 0.30 | 2310 | 155 | 0.81 | 0.72 | 7130 | 1956 | 1967 TCPL |
| 32 | 0.12 | 0.35 | 2310 | 155 | 0.81 | 0.72 | 6960 | 1956 | 1965 TCPL |
| 17 | 0.14 | 0.30 | 2300 | 150 | 0.81 | 0.73 | 6840 | 1953 | 1968 TCPL |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 6920 | 1955 | 1970 TCPL |
| | | | | | | | | | 1968 |
| 16 | 0.16 | 0.20 | 2310 | 160 | 0.82 | 0.73 | 6990 | 1958 | 1968 |
| 55 | 0.10 | 0.15 | 2290 | 160 | 0.82 | 0.73 | 6970 | 1955 | 1968 TCPL |
| 32 | 0.07 | 0.20 | 2280 | 155 | 0.82 | 0.73 | 6770 | 1955 | 1968 TCPL |
| 29 | 0.04 | 0.20 | 2320 | 170 | 0.83 | 0.72 | 7210 | 1961 | 1968 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1961 |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1965 NUL |
| | | | | | | | | | 1966 NUL |
| 24 | 0.15 | 0.15 | 1930 | 150 | 0.85 | 0.65 | 6470 | 1968 | 1968 A&S |
| 6 | 0.12 | 0.40 | 3210 | 160 | 0.82 | 0.73 | 7110 | 1967 | 1970 A&S |
| | | | | | | | | | 1968 |
| 22 | 0.09 | 0.30 | 2870 | 150 | 0.82 | 0.69 | 6910 | 1966 | 1970 |
| 64 | 0.07 | 0.15 | 5150 | 215 | 1.00 | 0.99 | 10880 | 1964 | 1967 A&S |
| 122 | 0.07 | 0.15 | 5150 | 215 | 1.00 | 0.99 | 10900 | 1964 | 1968 |
| | | | | | | | | | 1965 INJECTED INTO D-3 |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU.FT. | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
|---|---|---|---|---|---|---|---|---|---|
| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| GOLDEN SPIKE (CONTINUED) | | | | | | | | | |
| ELAIRMORE | 14 | 0.80 | 0.05 | 11 | 2 | 9 | 1050 | 9 | |
| D-1 A | 33 | 0.85 | 0.10 | 25 | 13 | 12 | 1060 | 13 | |
| D-2 ASSOC | 3 | 0.85 | 0.15 | 3 | | 3 | 1120 | 3 | |
| D-2 SOLN | 8 | 0.65 | 0.20 | 4 | 1 | 3 | 1120* | 3 | |
| D-3 A ASSOC | | 0.90 | 0.10 | | -61 | 61 | 1100* | 67 | |
| D-3 A SOLN | 130 | 0.90 | 0.40 | 69 | 32 | 37 | 1130* | 42 | |
| GOODWIN | | | | | | | | | |
| JURASSIC A | 20 | 0.85 | 0.10 | 15 | | 15 | 1070 | 16 | 4560 |
| GORDONDALE | | | | | | | | | |
| PEACE RIVER A | 34 | 0.85 | 0.05 | 27 | 26 | 1 | 1000 | 1 | 9190 |
| PEACE RIVER (OTHER) | 1 | 0.85 | 0.05 | 1 | | 1 | 1000 | 1 | |
| SPIRIT RIVER | 6 | 0.85 | 0.05 | 5 | | 5 | 1000 | 5 | |
| GETHING A | 39 | 0.75 | 0.03 | 29 | 17 | 12 | 1020 | 12 | |
| GETHING B | 12 | 0.90 | 0.05 | 10 | 9 | 1 | 1020 | 1 | |
| CADOMIN | 8 | 0.85 | 0.05 | 6 | 5 | 1 | 1020 | 1 | |
| GREENCOURT | | | | | | | | | |
| JURASSIC A | 46 | 0.80 | 0.10 | 33 | | 33 | 1070 | 35 | 7730 |
| JURASSIC B | 14 | 0.80 | 0.05 | 10 | | 10 | 1070 | 11 | 3770 |
| RUNDLE | 3 | 0.80 | 0.05 | 2 | | 2 | 1130 | 2 | |
| PEKISKO A ASSOC | 130 | 0.85 | 0.10 | 98 | | 98 | 1130 | 111 | 7830 |
| HACKETT | | | | | | | | | |
| MANNVILLE A | 60 | 0.90 | 0.10 | 49 | 11 | 38 | 1100 | 42 | 3420 |
| MANNVILLE (OTHER) | 2 | 0.90 | 0.10 | 1 | | 1 | 1100 | 1 | |
| HAIRY HILL | | | | | | | | | |
| VIKING | 2 | 0.75 | 0.05 | 1 | | 1 | 980 | 1 | |
| COLONY A | 31 | 0.90 | 0.05 | 27 | 14 | 13 | 1000* | 13 | |
| MANNVILLE (OTHER) | 1 | 0.85 | 0.05 | 1 | | 1 | 1000* | 1 | |
| NISKU | 3 | 0.80 | 0.05 | 2 | | 2 | 1000 | 2 | |
| HALLIDAY | | | | | | | | | |
| VIKING | 5 | 0.80 | 0.05 | 4 | 1 | 3 | 1040 | 3 | |
| HAMELIN CREEK | | | | | | | | | |
| PEACE RIVER | 3 | 0.80 | 0.05 | 2 | | 2 | 1000 | 2 | |
| GETHING | 3 | 0.80 | 0.05 | 3 | | 3 | 1010 | 3 | |
| CADOMIN A | 37 | 0.85 | 0.05 | 30 | 5 | 25 | 1060 | 27 | |
| TRIASSIC | 2 | 0.75 | 0.05 | 1 | | 1 | 1160 | 1 | |
| HANNA | | | | | | | | | |
| VIKING | 10 | 0.85 | 0.05 | 8 | | 8 | 1040 | 8 | |
| MANNVILLE | 3 | 0.85 | 0.05 | 2 | | 2 | 1050 | 2 | |
| BANFF | 2 | 0.80 | 0.05 | 1 | | 1 | 1080 | 1 | |
| HARMATTAN EAST | | | | | | | | | |
| RUNDLE ASSOC | 1060 | 0.85 | 0.11 | 800 | -21 | 821 | 1080* | 887 | 49300 |
| RUNDLE SOLN | 190 | 0.65 | 0.25 | 92 | 21 | 71 | 1080* | 77 | |
| HARMATTAN-ELKTON | | | | | | | | | |
| BLAIRMORE | 3 | 0.90 | 0.05 | 2 | | 2 | 1020 | 2 | |
| RUNDLE A | 47 | 0.25 | 0.14 | 10 | 6 | 4 | 1100 | 4 | 2300 |
| RUNDLE B ASSOC | 28 | 0.85 | 0.15 | 21 | 11 | 10 | 1080* | 11 | 7140 |
| RUNDLE C ASSOC | 1150 | 0.90 | 0.15 | 880 | -51 | 931 | 1080* | 1005 | 19020 |
| RUNDLE C SOLN | 180 | 0.65 | 0.30 | 83 | 38 | 45 | 1080* | 49 | |
| D-3 A | 430 | 0.80 | 0.68 | 110 | 14 | 96 | 960 | 92 | 10120 |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| | | | | | | | | | 1968 INJECTED INTO D-3 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 4540 | 1949 | 1970 INJECTED INTO D-3 |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1965 INJECTED INTO D-3 |
| | | | | | | | | | 1968 |
| | | | | | | | 5650 | 1949 | 1966 INJECTED INTO D-3 |
| 18 | 0.20 | 0.30 | 2010 | 160 | 0.86 | 0.66 | 5900 | 1956 | 1964 |
| 15 | 0.19 | 0.30 | 620 | 90 | 0.93 | 0.57 | 2740 | 1952 | 1962 WESTCOAST |
| | | | | | | | | | 1962 |
| | | | | | | | | | 1969 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 4240 | 1953 | 1969 WESTCOAST |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 4360 | 1967 | 1970 WESTCOAST |
| | | | | | | | | | 1969 WESTCOAST |
| 19 | 0.13 | 0.55 | 1620 | 115 | 0.82 | 0.66 | 4720 | 1958 | 1969 |
| 11 | 0.15 | 0.45 | 1600 | 140 | 0.83 | 0.69 | 4810 | 1967 | 1969 |
| | | | | | | | | | 1968 |
| 39 | 0.12 | 0.25 | 1620 | 145 | 0.85 | 0.64 | 4740 | 1961 | 1969 |
| 105 | 0.18 | 0.30 | 1220 | 135 | 0.85 | 0.65 | 3840 | 1952 | 1963 TCPL |
| | | | | | | | | | 1963 |
| | | | | | | | | | 1961 WESTERN MINERALS |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 1790 | 1954 | 1970 WESTERN MINERALS |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1961 TCPL |
| | | | | | | | | | 1962 |
| | | | | | | | | | 1961 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 3310 | 1951 | 1968 LOCAL UTILITY |
| | | | | | | | | | 1961 |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1957 |
| | | | | | | | | | 1957 LOCAL UTILITY |
| 30 | 0.10 | 0.25 | 3430 | 185 | 0.84 | 0.84 | 8390 | 1954 | 1969 POOL BEING CYCLED |
| | | | | | | | 8620 | 1954 | 1969 INJ INTO GAS CAP |
| | | | | | | | | | 1966 |
| 33 | 0.08 | 0.20 | 3630 | 205 | 0.89 | 0.71 | 9150 | 1957 | 1969 TCPL |
| 6 | 0.09 | 0.20 | 3430 | 195 | 0.85 | 0.82 | 8960 | 1955 | 1964 INJ INTO RUNDLE C |
| 70 | 0.11 | 0.20 | 3630 | 200 | 0.84 | 0.84 | 8990 | 1954 | 1964 POOL BEING CYCLED |
| | | | | | | | 9130 | 1954 | 1966 INJ INTO GAS CAP |
| 70 | 0.05 | 0.10 | 4680 | 230 | 0.77 | 0.93 | 11000 | 1961 | 1969 A&S |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU.FT | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| HEART RIVER | | | | | | | | | |
| PEACE RIVER | 2 | 0.85 | 0.05 | 2 | 1 | 1 | 1000 | 1 | |
| SPIRIT RIVER | 2 | 0.90 | 0.05 | 2 | 1 | 1 | 1000 | 1 | |
| HERCULES | | | | | | | | | |
| VIKING | 18 | 0.85 | 0.05 | 15 | | 15 | 1050 | 16 | |
| MANNVILLE | 7 | 0.80 | 0.05 | 6 | 1 | 5 | 960 | 5 | |
| HIGH PRAIRIE | | | | | | | | | |
| PEACE RIVER | 3 | 0.85 | 0.05 | 3 | | 3 | 1000 | 3 | |
| SPIRIT RIVER | 8 | 0.85 | 0.05 | 6 | | 6 | 1100 | 7 | |
| GETHING | 2 | 0.85 | 0.05 | 1 | | 1 | 1000 | 1 | |
| HOLBURN | | | | | | | | | |
| CARDIUM | 8 | 0.80 | 0.05 | 6 | 4 | 2 | 980 | 2 | |
| MANNVILLE | 16 | 0.85 | 0.10 | 12 | 1 | 11 | 1120 | 12 | |
| HOLMBERG | | | | | | | | | |
| MANNVILLE A | 9 | 0.70 | 0.05 | 6 | | 6 | 1050 | 6 | |
| MANNVILLE (OTHER) | 8 | 0.85 | 0.05 | 6 | | 6 | 1050 | 6 | |
| HOMEGLEN-RIMBEY | | | | | | | | | |
| D-3 ASSOC | 1090 | 0.85 | 0.18 | 760** | | | | | 11550 |
| D-3 SOLN | 86 | 0.50 | 0.15 | 37** | 327** | 470 | 1020* | 479 | |
| HUDSON | | | | | | | | | |
| MANNVILLE | 1 | 0.85 | 0.05 | 1 | | 1 | 1010 | 1 | |
| BANFF | 6 | 0.80 | 0.05 | 2 | | 2 | 1020 | 2 | |
| HUNTER VALLEY | | | | | | | | | |
| RUNDLE A | 73 | 0.85 | 0.25 | 47 | | 47 | 1000 | 47 | 1570 |
| RUNDLE (OTHER) | 5 | 0.85 | 0.25 | 3 | | 3 | 1000 | 3 | |
| HUSSAR | | | | | | | | | |
| BELLY RIVER | 10 | 0.75 | 0.05 | 7 | 3 | 4 | 1000 | 4 | |
| VIKING B | 32 | 0.75 | 0.05 | 22 | 4 | 18 | 1020* | 18 | 13000 |
| VIKING E | 24 | 0.80 | 0.05 | 18 | 6 | 12 | 1020* | 12 | 13590 |
| VIKING (OTHER) | 22 | 0.80 | 0.05 | 17 | 4 | 13 | 1020* | 13 | |
| BASAL COLORADO A | 26 | 0.75 | 0.05 | 19 | 9 | 10 | 1020* | 10 | 16390 |
| BASAL COLORADO C | 26 | 0.75 | 0.05 | 19 | 10 | 9 | 1030* | 9 | 16080 |
| BSL COLORADO (OTHER) | 4 | 0.80 | 0.05 | 3 | 1 | 2 | 1030* | 2 | |
| GLAUCONITIC N | 110 | 0.85 | 0.05 | 87 | 66 | 21 | 1030* | 22 | |
| GLAUCONITIC P | 17 | 0.85 | 0.05 | 14 | 12 | 2 | 1030* | 2 | 500 |
| GLAUCONITIC R | 20 | 0.85 | 0.05 | 16 | 11 | 5 | 1030* | 5 | 500 |
| OSTRACOD F | 27 | 0.80 | 0.05 | 20 | 1 | 19 | 1030* | 20 | 8300 |
| OSTRACOD R | 26 | 0.85 | 0.05 | 21 | 2 | 19 | 1030* | 20 | 7480 |
| BASAL MANNVILLE B | 30 | 0.85 | 0.05 | 25 | | 25 | 1030* | 26 | 1330 |
| BASAL MANNVILLE D | 11 | 0.90 | 0.05 | 10 | 1 | 9 | 1030* | 9 | 530 |
| MANNVILLE (OTHER) | 110 | 0.85 | 0.05 | 85 | 19 | 66 | 1030* | 68 | |
| GLAUCONITIC A ASSOC | 75 | 0.85 | 0.05 | 61 | 25 | 36 | 1030* | 37 | 5290 |
| GLAUCONITIC B ASSOC | 19 | 0.85 | 0.05 | 15 | 12 | 3 | 1030* | 3 | 3900 |
| MANN ASSOC (OTHER) | 29 | 0.80 | 0.05 | 22 | 6 | 16 | 1030* | 16 | |
| GLAUCONITIC A SOLN | 20 | 0.65 | 0.25 | 10 | 2 | 8 | 1030* | 8 | |
| INLAND | | | | | | | | | |
| VIKING A | 17 | 0.80 | 0.05 | 13 | | 13 | 980 | 13 | 15300 |
| MANNVILLE | 2 | 0.80 | 0.10 | 1 | | 1 | 1000 | 1 | |
| INNISFAIL | | | | | | | | | |
| BLAIRMORE ASSOC | 1 | 0.80 | 0.15 | 1 | | 1 | 1050 | 1 | |
| RUNDLE | 22 | 0.90 | 0.10 | 18 | | 18 | 1080 | 19 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESSIBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| | | | | | | | | | 1964 LOCAL UTILITY |
| | | | | | | | | | 1964 LOCAL UTILITY |
| | | | | | | | | | 1955 |
| | | | | | | | | | 1966 NUL |
| | | | | | | | | | 1961 CONSIDERED BEYOND |
| | | | | | | | | | 1961 ECONOMIC REACH |
| | | | | | | | | | 1961 |
| | | | | | | | | | 1966 GOLDEN SPIKE INJ |
| | | | | | | | | | 1968 GOLDEN SPIKE INJ |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 3420 | 1952 | 1970 BAROID OF CANADA |
| | | | | | | | | | 1958 |
| 172 | 0.08 | 0.10 | 2830 | 180 | 0.85 | 0.72 | 7830 | 1953 | 1970 |
| | | | | | | | 7920 | 1953 | 1964 TCPL AND A&S |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1970 MOBIL |
| 83 | 0.07 | 0.20 | 3580 | 145 | 0.84 | 0.68 | 9280 | 1962 | 1964 |
| | | | | | | | | | 1964 |
| 5 | 0.20 | 0.30 | 1120 | 105 | 0.88 | 0.63 | 4040 | 1955 | 1970 TCPL |
| 6 | 0.20 | 0.30 | 1150 | 100 | 0.89 | 0.63 | 3740 | 1961 | 1961 TCPL |
| | | | | | | | | | 1966 TCPL |
| | | | | | | | | | 1961 TCPL |
| 3 | 0.17 | 0.30 | 1240 | 110 | 0.88 | 0.61 | 4330 | 1952 | 1961 TCPL |
| 4 | 0.18 | 0.30 | 1230 | 110 | 0.88 | 0.63 | 4120 | 1955 | 1964 TCPL |
| | | | | | | | | | 1965 TCPL |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 4470 | 1955 | 1969 TCPL |
| 48 | 0.21 | 0.30 | 1490 | 110 | 0.82 | 0.65 | 4510 | 1957 | 1968 TCPL |
| 16 | 0.21 | 0.30 | 1490 | 110 | 0.83 | 0.64 | 4650 | 1960 | 1967 TCPL |
| 5 | 0.21 | 0.25 | 1370 | 110 | 0.84 | 0.65 | 4570 | 1956 | 1964 TCPL |
| [illegible] | 0.20 | 0.35 | 1510 | 115 | 0.82 | 0.65 | 4660 | 1956 | 1965 TCPL |
| 45 | 0.15 | 0.30 | 1470 | 105 | 0.82 | 0.67 | 4330 | 1960 | 1963 |
| 38 | 0.16 | 0.30 | 1510 | 115 | 0.83 | 0.66 | 4820 | 1955 | 1961 TCPL |
| | | | | | | | | | 1968 TCPL |
| 17 | 0.22 | 0.25 | 1480 | 110 | 0.83 | 0.64 | 4690 | 1952 | 1967 TCPL |
| 7 | 0.20 | 0.30 | 1470 | 110 | 0.83 | 0.67 | 4700 | 1956 | 1967 TCPL |
| | | | | | | | | | 1968 TCPL |
| | | | | | | | 4650 | 1952 | 1967 TCPL |
| 3 | 0.22 | 0.40 | 800 | 80 | 0.90 | 0.60 | 2190 | 1959 | 1963 |
| | | | | | | | | | 1963 |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1961 |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU FT | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| INNISFAIL (CONTINUED) | | | | | | | | | |
| WABAMUN | 3 | 0.85 | 0.15 | 2 | | 2 | 1080 | 2 | |
| D-3 B | 19 | 0.85 | 0.20 | 13 | | 13 | 1020 | 13 | 500 |
| D-3 ASSOC | 17 | 0.90 | 0.35 | 10 | | 10 | 1020 | 10 | 1220 |
| D-3 SOLN | 200 | 0.55 | 0.45 | 60 | 20 | 40 | 1130* | 45 | |
| IRRICANA | | | | | | | | | |
| WABAMUN A | 27 | 0.85 | 0.50 | 11 | 2 | 9 | 980 | 9 | 3296 |
| JARVIE | | | | | | | | | |
| VIKING | 10 | 0.80 | 0.05 | 7 | | 7 | 1040 | 7 | |
| MANNVILLE | 9 | 0.85 | 0.05 | 8 | | 8 | 1100 | 9 | |
| JENNER | | | | | | | | | |
| 2WS | 4 | 0.80 | 0.05 | 3 | | 3 | 970 | 3 | |
| BOW ISLAND | 6 | 0.75 | 0.05 | 3 | | 3 | 990 | 3 | |
| BASAL COLORADO | 8 | 0.85 | 0.05 | 6 | | 6 | 1040 | 6 | |
| BASAL COLORADO ASSOC | 1 | 0.85 | 0.15 | 1 | | 1 | 1040 | 1 | |
| MANNVILLE | 24 | 0.80 | 0.05 | 19 | | 19 | 1050 | 20 | |
| MANNVILLE ASSOC | 9 | 0.85 | 0.05 | 7 | | 7 | 1050 | 7 | |
| RUNDLE | 1 | 0.85 | 0.05 | 1 | | 1 | 1000 | 1 | |
| RUNDLE ASSOC | 3 | 0.85 | 0.05 | 2 | | 2 | 1000 | 2 | |
| JOARCAM | | | | | | | | | |
| VIKING | 3 | 0.75 | 0.05 | 2 | | 2 | 1040 | 2 | |
| VIKING ASSOC | 70 | 0.75 | 0.35 | 35 | -2 | 37 | 1040 | 38 | 13520 |
| VIKING SOLN | 42 | 0.35 | 0.65 | 9 | 2 | 7 | 1050 | 7 | |
| MANNVILLE 30-50-22 | 15 | 0.90 | 0.05 | 13 | | 13 | 960 | 12 | 500 |
| MANNVILLE (OTHER) | 3 | 0.90 | 0.05 | 3 | | 3 | 960 | 3 | |
| JOFFRE | | | | | | | | | |
| BLAIRMORE | 41 | 0.85 | 0.10 | 32 | 1 | 31 | 1020 | 32 | |
| LEDUC ASSOC | 2 | 0.85 | 0.15 | 2 | | 2 | 1050 | 2 | |
| JUDY CREEK | | | | | | | | | |
| VIKING A | 54 | 0.80 | 0.05 | 41 | 19 | 22 | 1010 | 22 | 23330 |
| BH LK A SOLN | 560 | 0.45 | 0.30 | 180 | 27 | 153 | 1090* | 167 | |
| BH LK B SOLN | 270 | 0.50 | 0.30 | 93 | 13 | 80 | 1090* | 87 | |
| JUDY CREEK SOUTH | | | | | | | | | |
| RUNDLE A | 13 | 0.90 | 0.10 | 10 | | 10 | 1050* | 11 | 500 |
| JUMPING POUND | | | | | | | | | |
| MISSISSIPPIAN | 840 | 0.88 | 0.16 | 620 | 297 | 323 | 1050* | 339 | |
| JUMPING POUND WEST | | | | | | | | | |
| RUNDLE A | 1090 | 0.80 | 0.20 | 700 | 32 | 668 | 1050* | 701 | 12600 |
| RUNDLE B | 280 | 0.80 | 0.20 | 180 | 4 | 176 | 1050* | 185 | 3400 |
| RUNDLE C | 310 | 0.80 | 0.20 | 200 | 2 | 198 | 1050* | 208 | 3420 |
| KAYBOB | | | | | | | | | |
| NOTIKEWIN A | 200 | 0.85 | 0.05 | 160 | 43 | 117 | 1100* | 129 | 25650 |
| NOTIKEWIN B | 170 | 0.85 | 0.05 | 140 | 67 | 73 | 1100* | 80 | |
| NOTIKEWIN D | 17 | 0.85 | 0.05 | 14 | | 14 | 1100* | 15 | 5660 |
| SPIRIT RIVER (OTHER) | 10 | 0.85 | 0.05 | 8 | | 8 | 1000 | 8 | |
| GETHING | 16 | 0.85 | 0.05 | 13 | | 13 | 1050 | 14 | |
| CADOMIN | 48 | 0.85 | 0.05 | 38 | | 38 | 1040 | 40 | |
| CADOMIN B ASSOC | 76 | 0.85 | 0.05 | 62 | | 62 | 1040 | 64 | 6110 |
| CADOMIN ASSOC | 6 | 0.80 | 0.05 | 4 | | 4 | 1040 | 4 | |
| WABAMUN | 1 | 0.80 | 0.10 | 1 | | 1 | 1070 | 1 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| | | | | | | | | | 1961 |
| 39 | 0.12 | 0.15 | 3410 | 185 | 0.85 | 0.79 | 8733 | 1969 | 1969 |
| 28 | 0.06 | 0.15 | 3550 | 195 | 0.84 | 0.81 | 8440 | 1957 | 1961 |
| | | | | | | | 8580 | 1957 | 1965 TCPL |
| 13 | 0.06 | 0.85 | 3530 | 165 | 0.71 | 0.90 | 7602 | 1958 | 1968 WESTCOAST |
| | | | | | | | | | 1960 CONSIDERED BEYOND |
| | | | | | | | | | 1956 ECONOMIC REACH |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1961 |
| | | | | | | | | | 1961 TCPL |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1961 |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1963 |
| 19 | 0.17 | 0.40 | 870 | 100 | 0.89 | 0.65 | 3240 | 1949 | 1968 |
| | | | | | | | 3250 | 1949 | 1968 GAS FLOOD |
| 57 | 0.20 | 0.35 | 1250 | 100 | 0.86 | 0.60 | 3980 | 1960 | 1961 |
| | | | | | | | | | 1961 |
| | | | | | | | | | 1967 LOCAL UTILITY |
| | | | | | | | | | 1967 |
| 6 | 0.18 | 0.35 | 1290 | 130 | 0.88 | 0.63 | 4610 | 1959 | 1968 NUL AND A&S |
| | | | | | | | 8660 | 1959 | 1966 NUL AND A&S |
| | | | | | | | 8840 | 1959 | 1966 NUL AND A&S |
| 56 | 0.10 | 0.20 | 1900 | 155 | 0.86 | 0.63 | 6040 | 1960 | 1960 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 9940 | 1944 | 1970 CWNG |
| 140 | 0.07 | 0.15 | 4250 | 185 | 0.92 | 0.74 | 10830 | 1961 | 1969 CWNG |
| 132 | 0.07 | 0.15 | 4320 | 190 | 0.93 | 0.75 | 11550 | 1963 | 1969 CWNG AND TCPL |
| 161 | 0.06 | 0.15 | 4350 | 180 | 0.91 | 0.75 | 11470 | 1967 | 1969 TCPL |
| 13 | 0.20 | 0.35 | 1530 | 135 | 0.88 | 0.61 | 4690 | 1957 | 1967 A&S |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 4820 | 1958 | 1968 A&S |
| 6 | 0.19 | 0.35 | 1390 | 145 | 0.88 | 0.61 | 5050 | 1958 | 1966 |
| | | | | | | | | | 1964 |
| | | | | | | | | | 1964 |
| | | | | | | | | | 1964 |
| 17 | 0.16 | 0.30 | 2210 | 160 | 0.84 | 0.72 | 5800 | 1962 | 1964 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1961 |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 POOL OR ZONE | 2 INITIAL GAS IN PLACE BCF | 3 POOL RECOVERY FRACTION | 4 SURFACE LOSS FRACTION | 5 INITIAL MARKETABLE GAS BCF | 6 MARKETABLE GAS PRODUCED AUG. 31/70 BCF | 7 REMAINING MARKETABLE GAS AUG. 31/70 BCF | 8 GROSS HEATING VALUE BTU/CU FT | 9 REMAINING MARKETABLE GAS AT 1000 BTU BCF | 10 AREA ACRES |
|---|---|---|---|---|---|---|---|---|---|
| KAYBOB (CONTINUED) | | | | | | | | | |
| NISKU | 5 | 0.85 | 0.35 | 3 | | 3 | 1070 | 3 | |
| BEAVERHILL LAKE | 1 | 0.80 | 0.15 | 1 | | 1 | 1070 | 1 | |
| BH LK ASSOC | 6 | 0.80 | 0.15 | 4 | | 4 | 1140* | 5 | |
| BH LK A SOLN | 340 | 0.40 | 0.25 | 100 | 18 | 82 | 1140* | 93 | |
| | | | | | | | | | |
| KAYBOB SOUTH | | | | | | | | | |
| VIKING A | 18 | 0.65 | 0.05 | 11 | 1 | 10 | 1120 | 11 | 4400 |
| CADOMIN A | 39 | 0.80 | 0.05 | 30 | 2 | 28 | 1070* | 30 | 8390 |
| CADOMIN B | 27 | 0.80 | 0.05 | 20 | | 20 | 1070* | 21 | 3430 |
| CADOMIN C | 17 | 0.80 | 0.05 | 13 | | 13 | 1070* | 14 | 3122 |
| | | | | | | | | | |
| CADOMIN (OTHER) | 15 | 0.80 | 0.05 | 12 | 1 | 11 | 1070* | 12 | |
| TRIASSIC | 2 | 0.80 | 0.05 | 2 | | 2 | 1160* | 2 | |
| TRIASSIC A ASSOC | 28 | 0.85 | 0.15 | 20 | | 20 | 1160* | 23 | 2360 |
| TRIASSIC SOLN | 99 | 0.40 | 0.25 | 30 | 1 | 29 | 1160* | 34 | |
| NISKU A | 19 | 0.90 | 0.20 | 14 | | 14 | 1160* | 16 | 1100 |
| | | | | | | | | | |
| NISKU (OTHER) | 1 | 0.80 | 0.05 | 1 | | 1 | 1160* | 1 | |
| BEAVERHILL LAKE A | 4340 | 0.85 | 0.35 | 2400 | 50 | 2350 | 1090* | 2562 | 58120 |
| | | | | | | | | | |
| KILLAM | | | | | | | | | |
| VIKING | 6 | 0.80 | 0.05 | 4 | | 4 | 1010 | 4 | |
| MANNVILLE | 13 | 0.80 | 0.05 | 9 | | 9 | 1000 | 9 | |
| NISKU | 1 | 0.80 | 0.05 | 1 | | 1 | 1170 | 1 | |
| | | | | | | | | | |
| KILLAM NORTH | | | | | | | | | |
| MANNVILLE | 19 | 0.80 | 0.05 | 15 | 1 | 14 | 1000 | 14 | |
| MANNVILLE ASSOC | 5 | 0.80 | 0.05 | 4 | | 4 | 1000 | 4 | |
| | | | | | | | | | |
| KNAPPEN | | | | | | | | | |
| MANNVILLE | 6 | 0.80 | 0.05 | 5 | | 5 | 1000 | 5 | |
| JURASSIC | 8 | 0.80 | 0.05 | 6 | 1 | 5 | 1000 | 5 | |
| MISSISSIPPIAN | 7 | 0.90 | 0.10 | 6 | | 6 | 1000 | 6 | |
| | | | | | | | | | |
| KNELLER | | | | | | | | | |
| MANNVILLE | 11 | 0.85 | 0.05 | 9 | 2 | 7 | 1000 | 7 | |
| | | | | | | | | | |
| KNOPCIK | | | | | | | | | |
| DOE CREEK A | 18 | 0.75 | 0.05 | 12 | 1 | 11 | 1000 | 11 | 4360 |
| | | | | | | | | | |
| LAC LA BICHE | | | | | | | | | |
| MANNVILLE | 10 | 0.80 | 0.05 | 8 | 1 | 7 | 1010 | 7 | |
| | | | | | | | | | |
| LAIT | | | | | | | | | |
| MANNVILLE | 4 | 0.85 | 0.15 | 3 | | 3 | 1010 | 3 | |
| | | | | | | | | | |
| LEAHURST | | | | | | | | | |
| MANNVILLE | 25 | 0.65 | 0.05 | 15 | 1 | 14 | 1160* | 16 | |
| | | | | | | | | | |
| LEDUC-WOODBEND | | | | | | | | | |
| CARDIUM | 12 | 0.80 | 0.05 | 9 | 7 | 2 | 1040 | 2 | |
| VIKING | 20 | 0.80 | 0.05 | 15 | 3 | 12 | 1070 | 13 | |
| BLAIRMORE | 68 | 0.80 | 0.05 | 53 | 19 | 34 | 1180 | 40 | |
| BLAIRMORE ASSOC | 34 | 0.85 | 0.05 | 27 | 2 | 25 | 1180 | 30 | |
| | | | | | | | | | |
| D-1 | 2 | 0.85 | 0.10 | 2 | 2 | □ 1 | 1050 | □ 1 | |
| D-1 ASSOC | 4 | 0.85 | 0.10 | 3 | | 3 | 1050 | 3 | |
| D-2 A ASSOC | 37 | 0.90 | 0.15 | 28 | -12 | 40 | 1180 | 47 | 9770 |
| D-2 A SOLN | 130 | 0.75 | 0.30 | 70 | 65 | 5 | 1180 | 6 | |
| D-2 B SOLN | 41 | 0.75 | 0.30 | 21 | 15 | 6 | 1180 | 7 | |
| | | | | | | | | | |
| D-3 A ASSOC | 420 | 0.85 | 0.15 | 300 | -7 | 307 | 1180 | 362 | 17490 |
| D-3 ASSOC (OTHER) | 6 | 0.85 | 0.15 | 4 | 1 | 3 | 1180 | 4 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| | | | | | | | | | 1961 |
| | | | | | | | | | 1964 |
| | | | | | | | | | 1962 |
| | | | | | | | 9780 | 1957 | 1965 A&S |
| 11 | 0.14 | 0.40 | 1450 | 150 | 0.86 | 0.66 | 5590 | 1960 | 1970 A&S |
| 8 | 0.15 | 0.35 | 2230 | 180 | 0.87 | 0.64 | 6710 | 1961 | 1966 A&S |
| 13 | 0.15 | 0.35 | 2230 | 180 | 0.87 | 0.64 | 6750 | 1963 | 1966 |
| 9 | 0.15 | 0.35 | 2230 | 180 | 0.87 | 0.64 | 6750 | 1961 | 1966 |
| | | | | | | | | | 1967 A&S |
| | | | | | | | | | 1964 |
| 14 | 0.13 | 0.10 | 2460 | 180 | 0.80 | 0.79 | 6760 | 1970 | 1970 |
| | | | | | | | 6980 | 1962 | 1969 A&S |
| 4 | 0.05 | 0.20 | 4100 | 225 | 0.93 | 0.80 | 9510 | 1958 | 1963 |
| | | | | | | | | | 1958 |
| 102 | 0.08 | 0.20 | 4600 | 240 | 0.88 | 1.00 | 10560 | 1961 | 1970 POOL BEING CYCLED |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1966 LOCAL UTILITY |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1966 CMG |
| | | | | | | | | | 1967 CMG |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1968 LOCAL UTILITY |
| 9 | 0.22 | 0.30 | 900 | 100 | 0.87 | 0.66 | 2920 | 1964 | 1966 LOCAL UTILITY |
| | | | | | | | | | 1968 LOCAL UTILITY |
| | | | | | | | | | 1970 CMG |
| | | | | | | | | | 1969 LOCAL UTILITY |
| | | | | | | | | | 1967 INJECTED INTO D-2 |
| | | | | | | | | | 1959 AND D-3 GAS CAPS |
| | | | | | | | | | 1959 AND SOLD TO NUL |
| | | | | | | | | | 1961 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1966 |
| 41 | 0.02 | 0.20 | 1780 | 150 | 0.80 | 0.73 | 5050 | 1947 | 1958 |
| | | | | | | | 5100 | 1947 | 1965 |
| | | | | | | | 5260 | 1947 | 1965 |
| 60 | 0.08 | 0.15 | 1890 | 150 | 0.83 | 0.66 | 5300 | 1947 | 1964 |
| | | | | | | | | | 1964 |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU. FT. | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| LEDUC-WOODBEND (CONTINUED) | | | | | | | | | |
| D-3 A SOLN | 140 | 0.70 | 0.30 | 70 | 61 | 9 | 1180 | 11 | |
| D-3 SOLN (OTHER) | 9 | 0.70 | 0.30 | 5 | 4 | 1 | 1180 | 1 | |
| LEGAL | | | | | | | | | |
| MANNVILLE | 4 | 0.75 | 0.05 | 4 | 2 | 2 | 1030 | 2 | |
| LINDBERGH | | | | | | | | | |
| VIKING | 4 | 0.65 | 0.05 | 2 | | 2 | 990 | 2 | |
| MANNVILLE | 18 | 0.80 | 0.05 | 14 | 8 | 6 | 1000 | 6 | |
| LITTLE BOW | | | | | | | | | |
| UPPER MANNVILLE A | 20 | 0.85 | 0.05 | 16 | 4 | 12 | 1000 | 12 | 3440 |
| MANNVILLE (OTHER) | 17 | 0.85 | 0.05 | 14 | 2 | 12 | 1000 | 12 | |
| MANNVILLE ASSOC | 1 | 0.85 | 0.05 | 1 | | 1 | 1000 | 1 | |
| LLOYDMINSTER | | | | | | | | | |
| MANNVILLE | 24 | 0.85 | 0.30 | 14 | 12 | 2 | 950 | 2 | |
| LONE PINE CREEK | | | | | | | | | |
| MANNVILLE | 2 | 0.80 | 0.10 | 1 | | 1 | 1020 | 1 | |
| WABAMUN A | 490 | 0.85 | 0.23 | 320 | 22 | 298 | 1000 | 298 | 33220 |
| D-3 A ASSOC | 120 | 0.85 | 0.25 | 76** | | | | | 3470 |
| D-3 A SOLN | 10 | 0.65 | 0.30 | 5** | 6** | 75 | 1060* | 80 | |
| D-3 ASSOC (OTHER) | 9 | 0.85 | 0.20 | 6 | | 6 | 1060* | 6 | |
| LONG COULEE | | | | | | | | | |
| MANNVILLE A | 16 | 0.85 | 0.25 | 10 | 1 | 9 | 1000 | 9 | 2070 |
| MANNVILLE (OTHER) | 11 | 0.85 | 0.20 | 7 | 1 | 6 | 1000 | 6 | |
| LOOKOUT BUTTE | | | | | | | | | |
| RUNDLE A | 660 | 0.80 | 0.15 | 450 | 97 | 353 | 1060* | 374 | 7280 |
| LOVETT RIVER | | | | | | | | | |
| BLAIRMORE | 5 | 0.90 | 0.05 | 5 | | 5 | 1040 | 5 | |
| RUNDLE A | 97 | 0.80 | 0.10 | 70 | | 70 | 1040 | 73 | 1100 |
| MAJEAU LAKE | | | | | | | | | |
| MANNVILLE | 2 | 0.80 | 0.05 | 2 | | 2 | 1000 | 2 | |
| BANFF 25-56-4 | 12 | 0.90 | 0.10 | 10 | | 10 | 1070 | 11 | 500 |
| BANFF (OTHER) | 2 | 0.85 | 0.05 | 2 | | 2 | 1070 | 2 | |
| MALMO | | | | | | | | | |
| VIKING | 8 | 0.85 | 0.05 | 6 | | 6 | 1000 | 6 | |
| BLAIRMORE | 6 | 0.85 | 0.10 | 4 | | 4 | 1030 | 4 | |
| BLAIRMORE ASSOC | 2 | 0.70 | 0.15 | 1 | | 1 | 1030 | 1 | |
| D-2 ASSOC | 4 | 0.80 | 0.20 | 3 | | 3 | 1100 | 3 | |
| D-3 B | 42 | 0.85 | 0.20 | 29 | | 29 | 1100 | 32 | 1960 |
| D-3 ASSOC | 1 | 0.85 | 0.15 | 1 | | 1 | 1100 | 1 | |
| MANYBERRIES | | | | | | | | | |
| BOW ISLAND A | 28 | 0.90 | 0.02 | 25 | 20 | 5 | 940 | 5 | |
| BOW ISLAND (OTHER) | 5 | 0.65 | 0.02 | 3 | 3 | □ 1 | 940 | □ 1 | |
| MANNVILLE | 2 | 0.80 | 0.05 | 1 | | 1 | 1000 | 1 | |
| MARLBORO | | | | | | | | | |
| LEDUC A | 170 | 0.85 | 0.25 | 100 | | 100 | 1000 | 100 | 1920 |
| MARSH HEAD CREEK | | | | | | | | | |
| LEDUC 17-59-20 | 27 | 0.85 | 0.35 | 15 | | 15 | 1050 | 16 | 500 |
| MARTEN HILLS | | | | | | | | | |
| PELICAN | 2 | 0.65 | 0.05 | 1 | | 1 | 990 | 1 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| | | | | | | | 5320 | 1947 | 1966 |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1955 CIGOL |
| | | | | | | | | | 1961 CANSALT |
| | | | | | | | | | 1962 CANSALT |
| 8 | 0.21 | 0.40 | 1680 | 105 | 0.82 | 0.67 | 3950 | 1965 | 1968 TCPL |
| | | | | | | | | | 1968 TCPL |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1966 LOCAL UTILITY |
| | | | | | | | | | 1963 |
| 34 | 0.06 | 0.20 | 3570 | 180 | 0.89 | 0.76 | 7920 | 1955 | 1970 TCPL |
| 48 | 0.08 | 0.15 | 3260 | 180 | 0.85 | 0.78 | 7950 | 1963 | 1970 |
| | | | | | | | 8010 | 1963 | 1967 TCPL |
| | | | | | | | | | 1967 |
| 9 | 0.20 | 0.35 | 1880 | 105 | 0.78 | 0.83 | 4380 | 1965 | 1968 TCPL |
| | | | | | | | | | 1968 TCPL |
| 153 | 0.07 | 0.20 | 4770 | 190 | 0.96 | 0.72 | 12060 | 1959 | 1967 TCPL |
| | | | | | | | | | 1970 |
| 177 | 0.06 | 0.20 | 4950 | 220 | 1.01 | 0.61 | 11870 | 1958 | 1959 |
| | | | | | | | | | 1955 |
| 60 | 0.09 | 0.15 | 1500 | 125 | 0.82 | 0.67 | 4250 | 1951 | 1955 |
| | | | | | | | | | 1970 |
| | | | | | | | | | 1960 |
| | | | | | | | | | 1959 |
| | | | | | | | | | 1960 |
| | | | | | | | | | 1959 |
| 46 | 0.07 | 0.10 | 2180 | 130 | 0.81 | 0.76 | 5990 | 1959 | 1966 |
| | | | | | | | | | 1966 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 2570 | 1947 | 1967 CMG |
| | | | | | | | | | 1967 CMG |
| | | | | | | | | | 1957 |
| 129 | 0.07 | 0.10 | 5050 | 265 | 0.97 | 0.74 | 12150 | 1965 | 1969 |
| 29 | 0.06 | 0.15 | 4800 | 245 | 0.92 | 0.66 | 11540 | 1961 | 1964 |
| | | | | | | | | | 1964 |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1<br>POOL OR ZONE | 2<br>INITIAL GAS IN PLACE<br>BCF | 3<br>POOL RECOVERY<br>FRACTION | 4<br>SURFACE LOSS<br>FRACTION | 5<br>INITIAL MARKETABLE GAS<br>BCF | 6<br>MARKETABLE GAS PRODUCED AUG. 31/70<br>BCF | 7<br>REMAINING MARKETABLE GAS AUG. 31/70<br>BCF | 8<br>GROSS HEATING VALUE<br>BTU/CU FT | 9<br>REMAINING MARKETABLE GAS AT 1000 BTU<br>BCF | 10<br>AREA<br>ACRES |
|---|---|---|---|---|---|---|---|---|---|
| MARTEN HILLS (CONTINUED) | | | | | | | | | |
| MANNVILLE (OTHER) | 27 | 0.80 | 0.05 | 19 | | 19 | 990 | 19 | |
| WBSK A & WAB A | 1210 | 0.75 | 0.05 | 860 | 25 | 835 | 990 | 827 | 180000 |
| WABAMUN B | 14 | 0.75 | 0.05 | 10 | | 10 | 1000 | 10 | 4280 |
| WABAMUN (OTHER) | 2 | 0.75 | 0.05 | 2 | | 2 | 1000 | 2 | |
| MATZIWIN | | | | | | | | | |
| VIKING | 11 | 0.85 | 0.05 | 9 | | 9 | 1090 | 10 | |
| MANNVILLE | 1 | 0.80 | 0.05 | 1 | | 1 | 1090 | 1 | |
| MAZEPPA | | | | | | | | | |
| RUNDLE 16-19-27 | 20 | 0.90 | 0.15 | 15 | | 15 | 1060 | 16 | 1100 |
| WABAMUN | 26 | 0.85 | 0.45 | 12 | | 12 | 1000 | 12 | |
| MEDICINE HAT | | | | | | | | | |
| MILK RIVER A | 96 | 0.55 | 0.05 | 50 | | 50 | 960 | 48 | 64070 |
| MILK RIVER (OTHER) | 3 | 0.55 | 0.05 | 1 | | 1 | 960 | 1 | |
| MEDICINE HAT | 2550 | 0.80 | 0.02 | 2000 | 665 | 1335 | 970 | 1295 | 983680 |
| BOW ISLAND | 15 | 0.60 | 0.05 | 9 | 1 | 8 | 970 | 8 | |
| JURASSIC | 6 | 0.80 | 0.05 | 5 | 2 | 3 | 1000 | 3 | |
| MEDICINE RIVER | | | | | | | | | |
| BASAL MANNVILLE A | 34 | 0.85 | 0.15 | 25 | | 25 | 1150* | 29 | 3680 |
| MANNVILLE (OTHER) | 77 | 0.85 | 0.15 | 55 | | 55 | 1150* | 63 | |
| OSTRACOD B ASSOC | 14 | 0.85 | 0.15 | 10 | | 10 | 1150* | 12 | 3980 |
| OSTRACOD C ASSOC | 40 | 0.85 | 0.15 | 29** | | | | | 2900 |
| OSTRACOD C SOLN | 2 | 0.60 | 0.45 | 1** | 6** | 24 | 1150* | 28 | |
| BASAL QUARTZ B ASSOC | 32 | 0.85 | 0.15 | 23 | | 23 | 1150* | 26 | 2310 |
| MANN ASSOC (OTHER) | 31 | 0.85 | 0.15 | 22 | | 22 | 1150* | 25 | |
| GLAUCONITIC A SOLN | 98 | 0.60 | 0.45 | 32 | | 32 | 1150* | 37 | |
| MANN SOLN (OTHER) | 37 | 0.50 | 0.45 | 10 | | 10 | 1150* | 12 | |
| JURASSIC | 15 | 0.85 | 0.15 | 11 | | 11 | 1020* | 11 | |
| JURASSIC D ASSOC | 15 | 0.80 | 0.15 | 10 | | 10 | 1020* | 10 | 910 |
| JUR ASSOC (OTHER) | 16 | 0.80 | 0.15 | 11 | | 11 | 1020* | 11 | |
| JURASSIC SOLN | 70 | 0.65 | 0.45 | 25 | | 25 | 1020* | 26 | |
| PEKISKO P | 65 | 0.80 | 0.11 | 47 | 4 | 43 | 1100* | 47 | 3220 |
| RUNDLE (OTHER) | 20 | 0.85 | 0.15 | 14 | 1 | 13 | 1100* | 14 | |
| RUNDLE ASSOC | 9 | 0.85 | 0.15 | 6 | | 6 | 1100* | 7 | |
| RUNDLE SOLN | 36 | 0.60 | 0.45 | 12 | | 12 | 1200* | 14 | |
| LEDUC ASSOC | 2 | 0.85 | 0.20 | 1 | | 1 | 1100* | 1 | |
| MELLOWDALE | | | | | | | | | |
| VIKING | 1 | 0.75 | 0.05 | 1 | | 1 | 1000 | 1 | |
| M KWAN | | | | | | | | | |
| BELLY RIVER | 1 | 0.75 | 0.05 | 1 | | 1 | 990 | 1 | |
| VIKING B | 14 | 0.75 | 0.05 | 9 | | 9 | 1000 | 9 | 9640 |
| VIKING (OTHER) | 2 | 0.75 | 0.05 | 1 | | 1 | 1000 | 1 | |
| MANNVILLE | 11 | 0.80 | 0.05 | 8 | | 8 | 1100 | 9 | |
| MILLET | | | | | | | | | |
| MANNVILLE 1-49-25 | 25 | 0.50 | 0.05 | 12 | | 12 | 1020 | 12 | 5880 |
| MINNEHIK-BUCK LAKE | | | | | | | | | |
| MANNVILLE | 2 | 0.75 | 0.05 | 1 | | 1 | 1000 | 1 | |
| PEKISKO A | 740 | 0.85 | 0.12 | 550 | 135 | 415 | 1120* | 465 | |
| PEKISKO B | 71 | 0.85 | 0.10 | 54 | 4 | 50 | 1120* | 56 | 7620 |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11<br>AVERAGE PAY THICKNESS<br>FEET | 12<br>POROSITY<br>FRACTION | 13<br>LIQUID SATURATION<br>FRACTION | 14<br>INITIAL PRESSURE<br>PSIA | 15<br>RESERVOIR TEMPERATURE<br>°F | 16<br>COMPRESS-IBILITY FACTOR<br>FRACTION | 17<br>RAW GAS SPECIFIC GRAVITY | 18<br>AVERAGE WELL DEPTH<br>FEET | 19<br>DISCOVERY YEAR | 20<br>DATE LAST REVIEWED, DISPOSITION AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 1969 TCPL |
| 38 | 0.21 | 0.45 | 390 | 80 | 0.95 | 0.57 | 2260 | 1961 | 1969 TCPL |
| 20 | 0.21 | 0.35 | 390 | 80 | 0.95 | 0.57 | 2010 | 1967 | 1969 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1962 |
| | | | | | | | | | 1961 |
| 33 | 0.08 | 0.20 | 2700 | 145 | 0.81 | 0.71 | 6800 | 1956 | 1957 |
| | | | | | | | | | 1967 |
| 13 | 0.20 | 0.45 | 480 | 60 | 0.94 | 0.58 | 1270 | 1969 | 1970 TCPL |
| | | | | | | | | | 1970 |
| 8 | 0.26 | 0.40 | 630 | 60 | 0.91 | 0.57 | 1600 | 1904 | 1967 TCPL, MANY ISLANDS AND LOCAL UTILITY |
| | | | | | | | | | 1964 TCPL |
| | | | | | | | | | 1968 TCPL |
| 12 | 0.14 | 0.30 | 2640 | 160 | 0.81 | 0.71 | 7660 | 1958 | 1968 |
| | | | | | | | | | 1968 TCPL |
| 5 | 0.13 | 0.35 | 2830 | 155 | 0.80 | 0.76 | 7010 | 1954 | 1968 |
| 14 | 0.14 | 0.25 | 2930 | 150 | 0.79 | 0.76 | 7480 | 1963 | 1968 |
| | | | | | | | | | 1965 TCPL |
| 19 | 0.14 | 0.30 | 2380 | 150 | 0.81 | 0.72 | 7000 | 1959 | 1968 |
| | | | | | | | | | 1968 |
| | | | | | | | 7400 | 1964 | 1969 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1968 |
| 22 | 0.15 | 0.30 | 2340 | 145 | 0.81 | 0.70 | 6970 | 1962 | 1968 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1968 |
| 36 | 0.10 | 0.25 | 2380 | 140 | 0.79 | 0.74 | 6950 | 1963 | 1969 TCPL |
| | | | | | | | | | 1968 TCPL |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1968 LOCAL UTILITY |
| | | | | | | | | | 1970 |
| 5 | 0.14 | 0.40 | 1060 | 120 | 0.87 | 0.67 | 4580 | 1968 | 1970 |
| | | | | | | | | | 1970 |
| | | | | | | | | | 1967 |
| 7 | 0.20 | 0.70 | 1500 | 120 | 0.79 | 0.71 | 4440 | 1951 | 1968 |
| | | | | | | | | | 1956 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 6910 | 1952 | 1969 A&S |
| 19 | 0.10 | 0.25 | 2490 | 185 | 0.85 | 0.71 | 7300 | 1962 | 1966 A&S |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU.FT | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| MITSUE | | | | | | | | | |
| MANNVILLE | 3 | 0.85 | 0.05 | 2 | | 2 | 1070 | 2 | |
| GILWOOD ASSOC | 5 | 0.90 | 0.25 | 4 | | 4 | 1170 | 5 | |
| GILWOOD A SOLN | 470 | 0.50 | 0.25 | 180 | | 180 | 1170 | 211 | |
| MOOSE | | | | | | | | | |
| RUNDLE A | 86 | 0.80 | 0.20 | 55 | | 55 | 1000 | 55 | 1900 |
| MORINVILLE | | | | | | | | | |
| VIKING | 4 | 0.75 | 0.05 | 3 | | 3 | 1000 | 3 | |
| LOWER MANNVILLE A | 52 | 0.75 | 0.05 | 37 | 17 | 20 | 1070* | 21 | 6040 |
| LOWER MANNVILLE C | 22 | 0.75 | 0.08 | 13 | 9 | 4 | 1070* | 4 | |
| MANNVILLE (OTHER) | 59 | 0.80 | 0.05 | 46 | 22 | 24 | 1070* | 26 | |
| MOUNTAIN PARK | | | | | | | | | |
| TRIASSIC 36-47-22 | 21 | 0.85 | 0.05 | 17 | | 17 | 1090 | 19 | 1100 |
| MURIEL LAKE | | | | | | | | | |
| MANNVILLE | 9 | 0.75 | 0.05 | 6 | 2 | 4 | 1000 | 4 | |
| NEVIS | | | | | | | | | |
| BLAIRMORE A | 64 | 0.85 | 0.10 | 49 | | 49 | 1000 | 49 | 11990 |
| BLAIRMORE (OTHER) | 2 | 0.85 | 0.10 | 1 | | 1 | 1000 | 1 | |
| DEVONIAN | 1040 | 0.90 | 0.15 | 800 | 243 | 557 | 1000* | 557 | 31000 |
| NEW NORWAY | | | | | | | | | |
| VIKING | 3 | 0.80 | 0.10 | 2 | | 2 | 1000 | 2 | |
| BLAIRMORE | 10 | 0.85 | 0.05 | 9 | | 9 | 1010 | 9 | |
| NIPISI | | | | | | | | | |
| GILWOOD A SOLN | 250 | 0.55 | 0.25 | 100 | | 100 | 1150 | 115 | |
| NITON | | | | | | | | | |
| MANNVILLE | 6 | 0.80 | 0.05 | 5 | | 5 | 1070 | 5 | |
| CADOMIN | 8 | 0.90 | 0.05 | 7 | | 7 | 1070 | 7 | |
| NORDEGG | | | | | | | | | |
| TRIASSIC | 9 | 0.90 | 0.10 | 7 | | 7 | 1000 | 7 | |
| RUNDLE 17-41-17 | 25 | 0.90 | 0.10 | 20 | | 20 | 1000 | 20 | 2130 |
| NORMANDVILLE | | | | | | | | | |
| PEACE RIVER | 1 | 0.70 | 0.05 | 1 | | 1 | 990 | 1 | |
| GETHING | 6 | 0.85 | 0.05 | 5 | | 5 | 980 | 5 | |
| TRIASSIC | 1 | 0.85 | 0.05 | 1 | | 1 | 1090 | 1 | |
| PERMIAN | 2 | 0.85 | 0.05 | 2 | | 2 | 1060 | 2 | |
| MISSISSIPPIAN A | 16 | 0.85 | 0.05 | 13 | 2 | 11 | 1050 | 12 | 1410 |
| MISS (OTHER) | 22 | 0.85 | 0.05 | 18 | 2 | 16 | 1050 | 17 | |
| OBED | | | | | | | | | |
| VIKING 26-55-22 | 14 | 0.85 | 0.05 | 12 | | 12 | 1020 | 12 | 1100 |
| MANNVILLE | 6 | 0.85 | 0.05 | 5 | | 5 | 1040 | 5 | |
| RUNDLE | 4 | 0.85 | 0.10 | 4 | | 4 | 1050 | 4 | |
| D-2 A | 220 | 0.90 | 0.35 | 130 | | 130 | 1060 | 138 | 5290 |
| OBERLIN | | | | | | | | | |
| MANNVILLE | 4 | 0.75 | 0.05 | 3 | 3 | □ 1 | 1090 | □ 1 | |
| OKOTOKS | | | | | | | | | |
| CROSSFIELD | 500 | 0.80 | 0.55 | 180 | 57 | 123 | 1000 | 123 | 22880 |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11<br>AVERAGE PAY THICKNESS FEET | 12<br>POROSITY FRACTION | 13<br>LIQUID SATURATION FRACTION | 14<br>INITIAL PRESSURE PSIA | 15<br>RESERVOIR TEMPERATURE °F | 16<br>COMPRESS-IBILITY FACTOR FRACTION | 17<br>RAW GAS SPECIFIC GRAVITY | 18<br>AVERAGE WELL DEPTH FEET | 19<br>DISCOVERY YEAR | 20<br>DATE LAST REVIEWED, DISPOSITION AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 1968 |
| | | | | | | | | | 1966 |
| | | | | | | | 5680 | 1964 | 1968 |
| 140 | 0.06 | 0.15 | 1870 | 115 | 0.77 | 0.73 | 7570 | 1960 | 1969 |
| | | | | | | | | | 1962 |
| 16 | 0.22 | 0.30 | 1140 | 115 | 0.87 | 0.67 | 3600 | 1952 | 1969 CIGOL AND LOCAL UTILITY |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 3690 | 1951 | 1969 CIGOL AND LOCAL UTILITY |
| | | | | | | | | | 1962 CIGOL AND LOCAL UTILITY |
| 36 | 0.07 | 0.20 | 4100 | 240 | 0.98 | 0.62 | 10120 | 1956 | 1969 CONSIDERED BEYOND ECONOMIC REACH |
| | | | | | | | | | 1964 LOCAL UTILITY |
| 10 | 0.22 | 0.20 | 1400 | 130 | 0.84 | 0.66 | 4750 | 1952 | 1959 |
| | | | | | | | | | 1964 |
| 75 | 0.07 | 0.15 | 2340 | 140 | 0.81 | 0.69 | 5580 | 1952 | 1968 TCPL |
| | | | | | | | | | 1959 |
| | | | | | | | | | 1959 |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1963 |
| | | | | | | | | | 1961 CONSIDERED BEYOND |
| 70 | 0.04 | 0.20 | 1840 | 125 | 0.86 | 0.58 | 4930 | 1960 | 1961 ECONOMIC REACH |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1967 LOCAL UTILITY |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1967 |
| 13 | 0.27 | 0.35 | 1570 | 100 | 0.83 | 0.64 | 3440 | 1956 | 1967 LOCAL UTILITY |
| | | | | | | | | | 1967 LOCAL UTILITY |
| 15 | 0.14 | 0.40 | 3830 | 165 | 0.92 | 0.62 | 8080 | 1967 | 1967 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1966 |
| 70 | 0.06 | 0.20 | 5580 | 275 | 0.98 | 0.77 | 13150 | 1956 | 1970 |
| | | | | | | | | | 1970 LOCAL UTILITY |
| 40 | 0.06 | 0.20 | 3600 | 175 | 0.70 | 0.90 | 8690 | 1951 | 1970 CWNG |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU.FT. | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
|---|---|---|---|---|---|---|---|---|---|
| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| OLDS | | | | | | | | | |
| VIKING | 3 | 0.65 | 0.05 | 2 | | 2 | 1040* | 2 | |
| WABAMUN C | 110 | 0.85 | 0.25 | 67 | | 67 | 1000* | 67 | 6330 |
| WABAMUN A ASSOC | 350 | 0.85 | 0.25 | 220** | | | | | 31030 |
| WABAMUN A SOLN | 62 | 0.65 | 0.40 | 24** | 58** | 186 | 1000* | 186 | |
| OPEN CREEK | | | | | | | | | |
| BASAL QUARTZ A | 14 | 0.85 | 0.10 | 11 | | 11 | 1080* | 12 | 500 |
| MANNVILLE (OTHER) | 19 | 0.90 | 0.15 | 14 | | 14 | 1080* | 15 | |
| RUNDLE | 11 | 0.85 | 0.10 | 8 | | 8 | 1080* | 9 | |
| OWLSEYE | | | | | | | | | |
| MANNVILLE | 2 | 0.85 | 0.05 | 2 | | 2 | 1020 | 2 | |
| OYEN | | | | | | | | | |
| VIKING A | 62 | 0.80 | 0.10 | 44 | 5 | 39 | 980 | 38 | 15510 |
| VIKING C | 13 | 0.80 | 0.05 | 10 | 6 | 4 | 980 | 4 | |
| VIKING (OTHER) | 3 | 0.80 | 0.05 | 2 | | 2 | 980 | 2 | |
| DETRITAL | 10 | 0.85 | 0.05 | 8 | 2 | 6 | 1010 | 6 | |
| PADDLE RIVER | | | | | | | | | |
| JURASSIC-DETRITAL | 180 | 0.80 | 0.10 | 130 | 26 | 104 | 1130* | 118 | 30000 |
| JURASSIC (OTHER) | 2 | 0.80 | 0.10 | 1 | | 1 | 1130* | 1 | |
| RUNDLE ASSOC | 36 | 0.85 | 0.10 | 27 | | 27 | 1060 | 29 | 9300 |
| PAKOWKI LAKE | | | | | | | | | |
| BOW ISLAND A | 21 | 0.65 | 0.05 | 13 | 10 | 3 | 940 | 3 | 21480 |
| BOW ISLAND (OTHER) | 4 | 0.85 | 0.05 | 3 | | 3 | 940 | 3 | |
| MANNVILLE | 1 | 0.90 | 0.05 | 1 | | 1 | 1000 | 1 | |
| PARKLAND | | | | | | | | | |
| RUNDLE | 2 | 0.90 | 0.15 | 1** | 1** | | 1010 | | |
| PARKLAND NORTH-EAST | | | | | | | | | |
| RUNDLE 29-15-26 | 15 | 0.85 | 0.15 | 11 | | 11 | 1010 | 11 | 2130 |
| RUNDLE (OTHER) | 5 | 0.90 | 0.15 | 4 | | 4 | 1010 | 4 | |
| PELICAN | | | | | | | | | |
| WABISKAW | 18 | 0.70 | 0.05 | 12 | | 12 | 990 | 12 | |
| WABISKAW ASSOC | 3 | 0.65 | 0.05 | 2 | | 2 | 990 | 2 | |
| PEMBINA | | | | | | | | | |
| KEYSTONE BR A | 36 | 0.80 | 0.05 | 24 | 5 | 19 | 1070* | 20 | 5700 |
| BELLY RIVER (OTHER) | 28 | 0.80 | 0.05 | 21 | | 21 | 1070* | 22 | |
| BELLY RIVER ASSOC | 21 | 0.80 | 0.05 | 17 | | 17 | 1070* | 18 | |
| BELLY RIVER SOLN | 90 | 0.45 | 0.80 | 9 | 1 | 8 | 1070* | 9 | |
| CARDIUM SOLN | 4100 | 0.36 | 0.40 | 880 | 176 | 704 | 1130* | 796 | |
| VIKING | 11 | 0.80 | 0.05 | 8 | | 8 | 1130* | 9 | |
| LOBSTICK GLAUC A | 130 | 0.75 | 0.06 | 90 | 30 | 60 | 1130* | 68 | 11400 |
| LOBSTICK GLAUC B | 93 | 0.85 | 0.06 | 74 | 9 | 65 | 1130* | 73 | 5180 |
| LOBSTICK GLAUC C & D | 69 | 0.80 | 0.06 | 46 | 2 | 44 | 1130* | 50 | 5870 |
| MANNVILLE (OTHER) | 19 | 0.75 | 0.05 | 14 | 4 | 10 | 1130* | 11 | |
| JURASSIC | 18 | 0.85 | 0.05 | 15 | | 15 | 1050* | 16 | |
| RUNDLE | 13 | 0.85 | 0.10 | 10 | | 10 | 1050* | 11 | |
| PENDANT D'OREILLE | | | | | | | | | |
| BOW ISLAND | 210 | 0.85 | 0.05 | 170 | 103 | 67 | 940 | 63 | 86630 |
| BOW ISLAND (OTHER) | 4 | 0.85 | 0.05 | 3 | | 3 | 940 | 3 | |
| MANNVILLE A | 47 | 0.90 | 0.05 | 40 | 20 | 20 | 1000 | 20 | 4480 |
| MANNVILLE C | 35 | 0.90 | 0.05 | 30 | 7 | 23 | 1000 | 23 | 2590 |
| MANNVILLE (OTHER) | 19 | 0.90 | 0.05 | 16 | 2 | 14 | 1000 | 14 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11<br>AVERAGE PAY THICKNESS FEET | 12<br>POROSITY FRACTION | 13<br>LIQUID SATURATION FRACTION | 14<br>INITIAL PRESSURE PSIA | 15<br>RESERVOIR TEMPERATURE °F | 16<br>COMPRESS-IBILITY FACTOR FRACTION | 17<br>RAW GAS SPECIFIC GRAVITY | 18<br>AVERAGE WELL DEPTH FEET | 19<br>DISCOVERY YEAR | 20<br>DATE LAST REVIEWED, DISPOSITION AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 1 |
| | | | | | | | | | 1965 | 2 |
| 29 | 0.06 | 0.15 | 3610 | 165 | 0.83 | 0.81 | 8690 | 1959 | 1970 TCPL | 3 |
| 27 | 0.05 | 0.20 | 3590 | 165 | 0.83 | 0.75 | 8680 | 1952 | 1967 | 4 |
| | | | | | | | 8990 | 1952 | 1967 TCPL | 5 |
| | | | | | | | | | | 6 |
| | | | | | | | | | | 7 |
| 38 | 0.14 | 0.35 | 2800 | 180 | 0.84 | 0.71 | 7190 | 1967 | 1968 | 8 |
| | | | | | | | | | 1968 | 9 |
| | | | | | | | | | 1968 | 10 |
| | | | | | | | | | | 11 |
| | | | | | | | | | | 12 |
| | | | | | | | | | 1961 LOCAL UTILITY | 13 |
| | | | | | | | | | | 14 |
| | | | | | | | | | | 15 |
| 8 | 0.28 | 0.40 | 970 | 80 | 0.89 | 0.59 | 2520 | 1949 | 1970 TCPL | 16 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 2570 | 1951 | 1969 TCPL | 17 |
| | | | | | | | | | 1965 | 18 |
| | | | | | | | | | 1965 TCPL | 19 |
| | | | | | | | | | | 20 |
| | | | | | | | | | | 21 |
| 22 | 0.14 | 0.65 | 1780 | 140 | 0.82 | 0.70 | 5050 | 1956 | 1969 NUL | 22 |
| | | | | | | | | | 1969 | 23 |
| 14 | 0.08 | 0.35 | 1780 | 130 | 0.81 | 0.82 | 5090 | 1956 | 1966 | 24 |
| | | | | | | | | | | 25 |
| | | | | | | | | | | 26 |
| 3 | 0.21 | 0.30 | 790 | 75 | 0.91 | 0.59 | 2200 | 1955 | 1967 CMG | 27 |
| | | | | | | | | | 1967 | 28 |
| | | | | | | | | | 1967 | 29 |
| | | | | | | | | | | 30 |
| | | | | | | | | | | 31 |
| | | | | | | | | | 1970 POOL ABANDONED | 32 |
| | | | | | | | | | | 33 |
| | | | | | | | | | | 34 |
| 16 | 0.07 | 0.25 | 2830 | 145 | 0.83 | 0.66 | 6940 | 1953 | 1963 CONSIDERED BEYOND | 35 |
| | | | | | | | | | 1956 ECONOMIC REACH | 36 |
| | | | | | | | | | | 37 |
| | | | | | | | | | | 38 |
| | | | | | | | | | 1968 | 39 |
| | | | | | | | | | 1964 | 40 |
| | | | | | | | | | | 41 |
| | | | | | | | | | | 42 |
| 16 | 0.19 | 0.35 | 1020 | 100 | 0.88 | 0.60 | 3200 | 1956 | 1969 NUL | 43 |
| | | | | | | | | | 1965 NUL | 44 |
| | | | | | | | | | 1965 | 45 |
| | | | | | | | | | 1965 NUL | 46 |
| | | | | | | | | | | 47 |
| | | | | | | | 5080 | 1953 | 1967 NUL | 48 |
| | | | | | | | | | 1956 | 49 |
| 25 | 0.14 | 0.50 | 1990 | 135 | 0.80 | 0.69 | 5970 | 1957 | 1970 A&S | 50 |
| 23 | 0.16 | 0.30 | 1970 | 135 | 0.81 | 0.69 | 5640 | 1958 | 1968 NUL | 51 |
| 24 | 0.15 | 0.45 | 1990 | 140 | 0.81 | 0.66 | 6110 | 1959 | 1970 A&S | 52 |
| | | | | | | | | | | 53 |
| | | | | | | | | | 1959 A&S | 54 |
| | | | | | | | | | 1965 | 55 |
| | | | | | | | | | 1966 A&S | 56 |
| | | | | | | | | | | 57 |
| | | | | | | | | | | 58 |
| 6 | 0.22 | 0.25 | 710 | 75 | 0.92 | 0.59 | 2030 | 1946 | 1968 CMG | 59 |
| | | | | | | | | | 1967 | 60 |
| 20 | 0.21 | 0.35 | 1150 | 85 | 0.87 | 0.58 | 2740 | 1961 | 1968 CMG | 61 |
| 25 | 0.22 | 0.35 | 1160 | 85 | 0.87 | 0.58 | 2690 | 1965 | 1968 CMG | 62 |
| | | | | | | | | | | 63 |
| | | | | | | | | | 1968 CMG | 64 |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 POOL OR ZONE | 2 INITIAL GAS IN PLACE BCF | 3 POOL RECOVERY FRACTION | 4 SURFACE LOSS FRACTION | 5 INITIAL MARKETABLE GAS BCF | 6 MARKETABLE GAS PRODUCED AUG. 31/70 BCF | 7 REMAINING MARKETABLE GAS AUG. 31/70 BCF | 8 GROSS HEATING VALUE BTU/CU FT | 9 REMAINING MARKETABLE GAS AT 1000 BTU BCF | 10 AREA ACRES |
|---|---|---|---|---|---|---|---|---|---|
| PENHOLD | | | | | | | | | |
| VIKING 33-36-28 | 14 | 0.90 | 0.05 | 12 | | 12 | 1020 | 12 | 1650 |
| PINCHER CREEK | | | | | | | | | |
| RUNDLE A | 1800 | 0.40 | 0.25 | 540 | 264 | 276 | 1020* | 282 | 14000 |
| PINE CREEK | | | | | | | | | |
| WABAMUN | 190 | 0.80 | 0.45 | 82 | 56 | 26 | 1050 | 27 | 9650 |
| WABAMUN (OTHER) | 30 | 0.85 | 0.45 | 14 | | 14 | 1000 | 14 | |
| D-3 | 770 | 0.50 | 0.35 | 250 | 151 | 99 | 1000 | 99 | 9480 |
| PINE NORTH-WEST | | | | | | | | | |
| RUNDLE | 8 | 0.85 | 0.10 | 6 | | 6 | 1030 | 6 | |
| D-3 A | 350 | 0.65 | 0.25 | 170 | 18 | 152 | 980 | 149 | 4220 |
| PLAIN | | | | | | | | | |
| VIKING | 1 | 0.80 | 0.05 | 1 | | 1 | 980 | 1 | |
| COLONY A | 13 | 0.80 | 0.05 | 10 | | 10 | 1000 | 10 | 7370 |
| SPARKY B | 20 | 0.80 | 0.05 | 15 | | 15 | 1000 | 15 | 6450 |
| MANNVILLE (OTHER) | 37 | 0.80 | 0.05 | 27 | | 27 | 1000 | 27 | |
| WINTERBURN | 1 | 0.75 | 0.05 | 1 | | 1 | 990* | 1 | |
| CAMROSE | 4 | 0.75 | 0.05 | 3 | | 3 | 990* | 3 | |
| POUCE COUPE | | | | | | | | | |
| PEACE RIVER A | 150 | 0.70 | 0.05 | 100 | 93 | 7 | 1000 | 7 | 25700 |
| PEACE RIVER (OTHER) | 2 | 0.80 | 0.05 | 2 | | 2 | 1000 | 2 | |
| BLUESKY-GETHING | 8 | 0.85 | 0.05 | 7 | | 7 | 1000 | 7 | |
| TRIASSIC | 7 | 0.85 | 0.05 | 5 | | 5 | 1060 | 5 | |
| POUCE COUPE SOUTH | | | | | | | | | |
| DOE CREEK | 5 | 0.60 | 0.05 | 3 | 2 | 1 | 1000 | 1 | |
| PEACE RIVER A | 34 | 0.70 | 0.03 | 23 | 20 | 3 | 1040 | 3 | |
| PEACE RIVER B | 44 | 0.70 | 0.02 | 31 | 31 | □ 1 | 1040 | □ 1 | 7160 |
| PEACE RIVER (OTHER) | 14 | 0.70 | 0.05 | 9 | | 9 | 1040 | 9 | |
| GETHING A | 20 | 0.85 | 0.05 | 17 | 13 | 4 | 1000 | 4 | |
| CADOMIN | 11 | 0.85 | 0.10 | 9 | 2 | 7 | 1000 | 7 | |
| TRIASSIC | 18 | 0.80 | 0.05 | 14 | | 14 | 1000 | 14 | |
| PREVO | | | | | | | | | |
| MANNVILLE | 5 | 0.85 | 0.10 | 4 | | 4 | 1020 | 4 | |
| PEKISKO A | 44 | 0.85 | 0.10 | 34 | 9 | 25 | 1110* | 28 | 2490 |
| PRINCESS | | | | | | | | | |
| 2WS A | 60 | 0.80 | 0.05 | 45 | 6 | 39 | 970 | 38 | 33310 |
| 2WS (OTHER) | 7 | 0.75 | 0.05 | 5 | | 5 | 970* | 5 | |
| BOW ISLAND | 5 | 0.75 | 0.05 | 4 | 2 | 2 | 1010 | 2 | |
| BASAL COLORADO | 17 | 0.75 | 0.05 | 12 | 5 | 7 | 1020* | 7 | |
| BASAL MANNVILLE A | 18 | 0.90 | 0.05 | 15 | 5 | 10 | 1020* | 10 | 1050 |
| MANNVILLE (OTHER) | 30 | 0.85 | 0.05 | 24 | 11 | 13 | 1020* | 13 | |
| BASAL MANN E ASSOC | 11 | 0.90 | 0.05 | 10 | 8 | 2 | 1020* | 2 | 1690 |
| JEFFERSON B | 30 | 0.85 | 0.05 | 24 | 4 | 20 | 1030* | 21 | 6940 |
| JEFFERSON ASSOC | 1 | 0.85 | 0.05 | 1 | | 1 | 1030* | 1 | |
| PROVOST | | | | | | | | | |
| VIKING A & B | 1050 | 0.88 | 0.02 | 900 | 321 | 579 | 1030 | 596 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESSIBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| 12 | 0.20 | 0.30 | 1710 | 145 | 0.89 | 0.69 | 5590 | 1958 | 1958 |
| 310 | 0.04 | 0.20 | 4940 | 190 | 0.97 | 0.72 | 12500 | 1948 | 1961 TCPL |
| 26 | 0.07 | 0.15 | 4500 | 210 | 0.82 | 0.83 | 10170 | 1956 | 1967 MAINTAINS PRESSURE |
| | | | | | | | | | 1965 IN |
| 122 | 0.07 | 0.15 | 4580 | 235 | 0.91 | 0.76 | 11020 | 1957 | 1969 WINDFALL D-3 A |
| | | | | | | | | | 1968 |
| 133 | 0.08 | 0.10 | 4650 | 240 | 0.95 | 0.71 | 10670 | 1963 | 1969 MAINTAINS PRESSURE IN WINDFALL D-3 A |
| | | | | | | | | | 1961 |
| 4 | 0.28 | 0.30 | 700 | 75 | 0.90 | 0.60 | 2000 | 1949 | 1969 |
| 8 | 0.23 | 0.45 | 750 | 75 | 0.90 | 0.57 | 2220 | 1958 | 1969 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1969 |
| 25 | 0.18 | 0.30 | 620 | 95 | 0.93 | 0.57 | 3210 | 1922 | 1966 WESTCOAST |
| | | | | | | | | | 1961 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1964 WESTCOAST AND PEACE RIVER TRANSMISSION |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 3210 | 1956 | 1969 WESTCOAST AND PEACE RIVER TRANSMISSION |
| 23 | 0.17 | 0.30 | 800 | 105 | 0.91 | 0.57 | 3240 | 1953 | 1969 WESTCOAST AND PEACE RIVER TRANSMISSION |
| | | | | | | | | | 1965 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 4980 | 1958 | 1969 WESTCOAST AND PEACE RIVER TRANSMISSION |
| | | | | | | | | | 1968 WESTCOAST AND PEACE RIVER TRANSMISSION |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1966 |
| 25 | 0.10 | 0.20 | 2330 | 160 | 0.83 | 0.69 | 6580 | 1958 | 1966 TCPL |
| 5 | 0.22 | 0.40 | 820 | 75 | 0.90 | 0.58 | 2190 | 1963 | 1967 TCPL |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1969 TCPL |
| | | | | | | | | | 1966 TCPL |
| 23 | 0.20 | 0.30 | 1550 | 85 | 0.82 | 0.61 | 3180 | 1940 | 1966 TCPL |
| | | | | | | | | | 1967 TCPL |
| 9 | 0.20 | 0.30 | 1550 | 85 | 0.82 | 0.61 | 3190 | 1940 | 1966 TCPL |
| 14 | 0.08 | 0.25 | 1590 | 100 | 0.82 | 0.82 | 3940 | 1940 | 1965 TCPL |
| | | | | | | | | | 1965 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 2510 | 1946 | 1968 TCPL AND LOCAL UTILITY |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1<br>POOL OR ZONE | 2<br>INITIAL GAS IN PLACE BCF | 3<br>POOL RECOVERY FRACTION | 4<br>SURFACE LOSS FRACTION | 5<br>INITIAL MARKETABLE GAS BCF | 6<br>MARKETABLE GAS PRODUCED AUG. 31/70 BCF | 7<br>REMAINING MARKETABLE GAS AUG. 31/70 BCF | 8<br>GROSS HEATING VALUE BTU/CU FT. | 9<br>REMAINING MARKETABLE GAS AT 1000 BTU BCF | 10<br>AREA ACRES |
|---|---|---|---|---|---|---|---|---|---|
| PROVOST (CONTINUED) | | | | | | | | | |
| VIKING (OTHER) | 35 | 0.75 | 0.05 | 25 | | 25 | 1030 | 26 | |
| VIKING ASSOC | 20 | 0.70 | 0.05 | 13 | | 13 | 1030 | 13 | |
| VIKING SOLN | 5 | 0.33 | 0.10 | 2 | | 2 | 1030 | 2 | |
| MANNVILLE | 32 | 0.85 | 0.05 | 25 | | 25 | 1000 | 25 | |
| QUIRK CREEK | | | | | | | | | |
| RUNDLE A | 740 | 0.85 | 0.20 | 500 | | 500 | 1110* | 555 | 9900 |
| RAINBOW | | | | | | | | | |
| SLAVE POINT | 6 | 0.90 | 0.15 | 4 | | 4 | 1100* | 4 | |
| SULPHUR POINT | 36 | 0.85 | 0.15 | 27 | | 27 | 1100* | 30 | |
| SULPHUR POINT ASSOC | 3 | 0.85 | 0.15 | 2 | | 2 | 1100* | 2 | |
| SULPHUR POINT SOLN | 4 | 0.65 | 0.20 | 2 | | 2 | 1100* | 2 | |
| MUSKEG | 9 | 0.85 | 0.15 | 6 | 1 | 5 | 1120* | 6 | |
| MUSKEG SOLN | 9 | 0.65 | 0.30 | 4 | | 4 | 1150* | 5 | |
| KEG RIVER Q | 18 | 0.85 | 0.10 | 14 | | 14 | 1150* | 16 | 160 |
| KEG RIVER FFF | 19 | 0.90 | 0.10 | 16 | 1 | 15 | 1150* | 17 | 160 |
| KEG RIVER (OTHER) | 17 | 0.85 | 0.15 | 12 | | 12 | 1150* | 14 | |
| KEG RIVER A ASSOC | 33 | 0.85 | 0.15 | 24 | -15 | 39 | 1200* | 47 | 340 |
| KEG RIVER F ASSOC | 74 | 0.85 | 0.90 | 57 | -2 | 59 | 1200* | 71 | 2260 |
| KR ASSOC (OTHER) | 20 | 0.85 | 0.10 | 15 | -2 | 17 | 1200* | 20 | |
| KEG RIVER A SOLN | 72 | 0.75 | 0.20 | 43 | 6 | 37 | 1260* | 47 | |
| KEG RIVER B SOLN | 91 | 0.45 | 0.20 | 33 | 3 | 30 | 1260* | 38 | |
| KEG RIVER F SOLN | 150 | 0.75 | 0.15 | 97 | 5 | 92 | 1260* | 116 | |
| KEG RIVER O SOLN | 30 | 0.50 | 0.25 | 11 | 1 | 10 | 1260* | 13 | |
| KEG RIVER AA SOLN | 52 | 0.40 | 0.20 | 17 | | 17 | 1260* | 21 | |
| KEG RIVER EEE SOLN | 19 | 0.70 | 0.25 | 10 | 1 | 9 | 1260* | 11 | |
| KEG R SOLN (OTHER) | 170 | 0.75 | 0.25 | 91 | 1 | 90 | 1260* | 113 | |
| RAINBOW SOUTH | | | | | | | | | |
| WINTERBURN | 2 | 0.90 | 0.05 | 2 | | 2 | 1060* | 2 | |
| SULPHUR POINT | 33 | 0.85 | 0.10 | 24 | | 24 | 1100* | 26 | |
| MUSKEG | 15 | 0.85 | 0.20 | 11 | | 11 | 1100* | 12 | |
| MUSKEG SOLN | 4 | 0.65 | 0.25 | 2 | | 2 | 1150* | 2 | |
| KEG RIVER | 7 | 0.85 | 0.15 | 5 | | 5 | 1150* | 6 | |
| KEG RIVER ASSOC | 18 | 0.85 | 0.15 | 13 | | 13 | 1150* | 15 | |
| KEG RIVER A SOLN | 34 | 0.75 | 0.25 | 19 | | 19 | 1200* | 23 | |
| KEG RIVER B SOLN | 37 | 0.75 | 0.15 | 24 | | 24 | 1200* | 29 | |
| KEG RIVER E SOLN | 57 | 0.75 | 0.25 | 32 | | 32 | 1200* | 38 | |
| KEG RIVER G SOLN | 24 | 0.75 | 0.25 | 13 | | 13 | 1200* | 16 | |
| KEG R SOLN (OTHER) | 20 | 0.75 | 0.25 | 11 | | 11 | 1200* | 13 | |
| RAINIER | | | | | | | | | |
| MANNVILLE | 1 | 0.85 | 0.05 | 1 | | 1 | 1020* | 1 | |
| REDLAND | | | | | | | | | |
| BELLY RIVER | 1 | 0.65 | 0.05 | 1 | | 1 | 1000 | 1 | |
| VIKING | 3 | 0.80 | 0.05 | 2 | | 2 | 1000 | 2 | |
| UPPER MANNVILLE A | 31 | 0.85 | 0.04 | 25 | 6 | 19 | 1070 | 20 | |
| MANNVILLE | 8 | 0.90 | 0.05 | 7 | | 7 | 1070 | 7 | |
| REDWATER | | | | | | | | | |
| VIKING | 26 | 0.75 | 0.05 | 19 | 1 | 18 | 1040 | 19 | |
| MANNVILLE | 1 | 0.80 | 0.05 | 1 | 1 | □ 1 | 1050 | □ 1 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1961 TCPL |
| 143 | 0.08 | 0.15 | 2270 | 120 | 0.75 | 0.75 | 6160 | 1967 | 1969 |
| | | | | | | | | | 1967 CONSIDERED BEYOND |
| | | | | | | | | | 1967 ECONOMIC REACH |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1967 INJ INTO GAS CAP |
| | | | | | | | | | 1969 |
| 248 | 0.07 | 0.10 | 2400 | 630 | 0.85 | 0.70 | 5743 | 1966 | 1968 |
| 396 | 0.05 | 0.20 | 2570 | 600 | 0.80 | 0.70 | 6050 | 1966 | 1968 INJ INTO GAS CAP |
| | | | | | | | | | 1967 |
| 171 | 0.11 | 0.06 | 2570 | 655 | 0.82 | 0.78 | 6015 | 1965 | 1969 |
| 79 | 0.07 | 0.15 | 2480 | 180 | 0.70 | 0.70 | 5870 | 1966 | 1967 |
| | | | | | | | | | 1967 |
| | | | | | | | 6390 | 1965 | 1969 INJ INTO GAS CAP |
| | | | | | | | 5970 | 1965 | 1967 INJ INTO GAS CAP |
| | | | | | | | 6090 | 1966 | 1967 INJ INTO GAS CAP |
| | | | | | | | 6050 | 1966 | 1969 INJ INTO GAS CAP |
| | | | | | | | 5530 | 1967 | 1969 |
| | | | | | | | 6090 | 1968 | 1968 INJ INTO GAS CAP |
| | | | | | | | | | 1969 INJ INTO GAS CAP |
| | | | | | | | | | 1967 CONSIDERED BEYOND |
| | | | | | | | | | 1967 ECONOMIC REACH |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1967 |
| | | | | | | | 6370 | 1965 | 1967 |
| | | | | | | | 6460 | 1966 | 1969 |
| | | | | | | | 6440 | 1966 | 1969 |
| | | | | | | | 6390 | 1967 | 1968 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1965 TCPL |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1961 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 4870 | 1961 | 1969 CWNG |
| | | | | | | | | | 1961 CWNG |
| | | | | | | | | | 1965 LOCAL UTILITY AND CIGOL |
| | | | | | | | | | 1960 LOCAL UTILITY AND CIGOL |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU.FT. | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| REDWATER (CONTINUED) | | | | | | | | | |
| D-1 | 4 | 0.85 | 0.05 | 3 | 2 | 1 | 1070 | 1 | |
| D-3 SOLN | 240 | 0.60 | 0.65 | 49 | 15 | 34 | 1220* | 41 | |
| RED WILLOW | | | | | | | | | |
| VIKING A | 14 | 0.75 | 0.05 | 10 | | 10 | 1020 | 10 | 7500 |
| VIKING (OTHER) | 2 | 0.80 | 0.05 | 2 | | 2 | 1020 | 2 | |
| MANNVILLE | 14 | 0.80 | 0.05 | 11 | | 11 | 1100 | 12 | |
| RETLAW | | | | | | | | | |
| BOW ISLAND | 8 | 0.75 | 0.05 | 6 | 1 | 5 | 950 | 5 | |
| BASAL COLORADO | 8 | 0.75 | 0.05 | 6 | | 6 | 1020 | 6 | |
| MANNVILLE B & D | 27 | 0.90 | 0.10 | 22 | 9 | 13 | 1000 | 13 | 3990 |
| MANNVILLE J | 21 | 0.90 | 0.05 | 18 | 1 | 17 | 1000 | 17 | 1250 |
| MANNVILLE K | 14 | 0.90 | 0.15 | 11 | | 11 | 1000 | 11 | 1250 |
| MANNVILLE (OTHER) | 32 | 0.85 | 0.10 | 24 | | 24 | 1000 | 24 | |
| MANNVILLE ASSOC | 6 | 0.85 | 0.15 | 5 | | 5 | 1000 | 5 | |
| RUNDLE | 2 | 0.85 | 0.10 | 1 | | 1 | 1010 | 1 | |
| RUNDLE ASSOC | 2 | 0.90 | 0.10 | 2 | | 2 | 1010 | 2 | |
| RICH | | | | | | | | | |
| LOWER MANNVILLE A | 16 | 0.85 | 0.10 | 12 | 2 | 10 | 1100 | 11 | 3810 |
| RICHDALE | | | | | | | | | |
| VIKING A & C | 18 | 0.85 | 0.05 | 15 | 1 | 14 | 1010 | 14 | 5740 |
| MANNVILLE | 13 | 0.75 | 0.05 | 11 | | 11 | 1050 | 12 | |
| RICINUS | | | | | | | | | |
| CARDIUM I | 18 | 0.90 | 0.15 | 14 | | 14 | 1000 | 14 | 500 |
| CARDIUM A ASSOC | 200 | 0.85 | 0.15 | 140 | | 140 | 1000 | 140 | 4000 |
| D-3 A | 350 | 0.85 | 0.40 | 180 | | 180 | 1100 | 198 | 1480 |
| RICINUS WEST | | | | | | | | | |
| D-3 A | 2140 | 0.85 | 0.45 | 1000 | | 1000 | 1100 | 1100 | |
| ROCHESTER | | | | | | | | | |
| VIKING | 1 | 0.75 | 0.05 | 1 | | 1 | 1000 | 1 | |
| MANNVILLE | 21 | 0.80 | 0.05 | 16 | | 16 | 1000 | 16 | |
| WABAMUN | 6 | 0.90 | 0.05 | 5 | | 5 | 1070 | 5 | |
| ROWLEY | | | | | | | | | |
| BELLY RIVER | 6 | 0.80 | 0.05 | 4 | | 4 | 1000 | 4 | |
| VIKING | 8 | 0.85 | 0.05 | 6 | | 6 | 1040 | 6 | |
| MANNVILLE | 12 | 0.85 | 0.05 | 10 | | 10 | 1070 | 11 | |
| MANNVILLE ASSOC | 5 | 0.85 | 0.05 | 4 | | 4 | 1070 | 4 | |
| PEKISKO A ASSOC | 47 | 0.90 | 0.10 | 38** | | | | | 6780 |
| PEKISKO A SOLN | 8 | 0.65 | 0.25 | 4** | 9** | 33 | 1100* | 36 | |
| RYCROFT | | | | | | | | | |
| BLUESKY | 7 | 0.80 | 0.05 | 5 | 4 | 1 | 1040 | 1 | |
| GETHING | 5 | 0.85 | 0.05 | 4 | 1 | 3 | 1040 | 3 | |
| SADDLE HILLS | | | | | | | | | |
| CADOTTE D | 37 | 0.70 | 0.05 | 25 | | 25 | 1020 | 26 | 5380 |
| PEACE RIVER (OTHER) | 11 | 0.70 | 0.05 | 7 | | 7 | 1020 | 7 | |
| GETHING | 5 | 0.80 | 0.05 | 4 | | 4 | 980 | 4 | |
| BELLOY A | 22 | 0.80 | 0.15 | 15 | | 15 | 1030 | 15 | 1050 |
| ST. ALBERT-BIG LAKE | | | | | | | | | |
| VIKING | 1 | 0.80 | 0.05 | 1 | | 1 | 1070* | 1 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS | |
| | | | | | | | | | 1967 LOCAL UTILITY AND | 2 |
| | | | | | | | | | CIGOL | 3 |
| | | | | | | | 3210 | 1948 | 1965 LOCAL UTILITY AND | 4 |
| | | | | | | | | | CIGOL | 5 |
| 5 | 0.23 | 0.35 | 900 | 105 | 0.91 | 0.60 | 3210 | 1955 | 1970 | 8 |
| | | | | | | | | | 1962 | 9 |
| | | | | | | | | | 1969 | 10 |
| | | | | | | | | | 1968 TCPL | 13 |
| | | | | | | | | | 1965 | 14 |
| [illegible] | 0.22 | 0.30 | 1720 | 95 | 0.79 | 0.71 | 3570 | 1959 | 1968 TCPL | 15 |
| 23 | 0.21 | 0.40 | 1700 | 95 | 0.81 | 0.71 | 3110 | 1966 | 1967 TCPL | 16 |
| 8 | 0.29 | 0.15 | 1650 | 85 | 0.79 | 0.71 | 3550 | 1954 | 1969 | 18 |
| | | | | | | | | | 1968 | 19 |
| | | | | | | | | | 1970 | 20 |
| | | | | | | | | | 1966 | 21 |
| | | | | | | | | | 1966 | 22 |
| 13 | 0.12 | 0.30 | 1270 | 135 | 0.87 | 0.65 | 4800 | 1953 | 1961 TCPL | 25 |
| 8 | 0.22 | 0.50 | 1080 | 115 | 0.87 | 0.62 | 3030 | 1955 | 1970 TCPL | 28 |
| | | | | | | | | | 1968 TCPL | 29 |
| 76 | 0.13 | 0.10 | 3940 | 155 | 0.83 | 0.83 | 8900 | 1969 | 1970 | 32 |
| 32 | 0.14 | 0.10 | 3940 | 155 | 0.83 | 0.83 | 8750 | 1969 | 1969 | 33 |
| 238 | 0.08 | 0.10 | 5890 | 225 | 0.96 | 0.78 | 13710 | 1968 | 1970 | 34 |
| | | CONFIDENTIAL | | | | | | | 1970 | 37 |
| | | | | | | | | | 1953 CONSIDERED BEYOND | 40 |
| | | | | | | | | | 1953 ECONOMIC REACH | 41 |
| | | | | | | | | | 1953 | 42 |
| | | | | | | | | | 1964 | 45 |
| | | | | | | | | | 1966 | 46 |
| | | | | | | | | | 1964 | 47 |
| | | | | | | | | | 1965 | 48 |
| 22 | 0.08 | 0.20 | 1500 | 120 | 0.82 | 0.71 | 4410 | 1960 | 1965 | 50 |
| | | | | | | | | | 1967 TCPL | 51 |
| | | | | | | | | | 1961 LOCAL UTILITY | 54 |
| | | | | | | | | | 1961 LOCAL UTILITY | 55 |
| 17 | 0.21 | 0.30 | 930 | 115 | 0.92 | 0.57 | 3640 | 1957 | 1965 | 58 |
| | | | | | | | | | 1965 | 59 |
| | | | | | | | | | 1965 | 60 |
| 35 | 0.10 | 0.25 | 2600 | 155 | 0.82 | 0.65 | 6970 | 1957 | 1965 | 61 |
| | | | | | | | | | 1965 | 64 |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU. FT. | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| ST. ALBERT-BIG LAKE (CONTINUED) | | | | | | | | | |
| VIKING ASSOC | 2 | 0.80 | 0.05 | 2 | | 2 | 1070* | 2 | |
| OSTRACOD A | 98 | 0.85 | 0.05 | 80 | 68 | 12 | 1070* | 13 | |
| BASAL QUARTZ B | 26 | 0.85 | 0.05 | 21 | | 21 | 1070* | 22 | 1060 |
| | | | | | | | | | |
| MANNVILLE (OTHER) | 6 | 0.85 | 0.05 | 5 | | 5 | 1070* | 5 | |
| | | | | | | | | | |
| ST. PAUL | | | | | | | | | |
| MANNVILLE | 5 | 0.75 | 0.10 | 4 | 4 | □ 1 | 1000 | □ 1 | |
| | | | | | | | | | |
| SAMSON | | | | | | | | | |
| BLAIRMORE | 8 | 0.85 | 0.05 | 7 | 1 | 6 | 1070* | 6 | |
| BLAIRMORE ASSOC | 9 | 0.80 | 0.05 | 7** | | | | | |
| BLAIRMORE SOLN | 2 | 0.65 | 0.05 | 1** | 6** | 2 | 1070* | 2 | |
| | | | | | | | | | |
| SARCEE | | | | | | | | | |
| RUNDLE A | 190 | 0.85 | 0.15 | 140 | 53 | 87 | 1050* | 91 | |
| | | | | | | | | | |
| SAVANNA CREEK | | | | | | | | | |
| RUNDLE A | 230 | 0.67 | 0.30 | 110 | 36 | 74 | 1020 | 75 | 5450 |
| | | | | | | | | | |
| SEDALIA | | | | | | | | | |
| VIKING A | 110 | 0.50 | 0.08 | 50 | 9 | 41 | 1010* | 41 | 65810 |
| VIKING (OTHER) | 4 | 0.80 | 0.05 | 3 | | 3 | 1010 | 3 | |
| MANNVILLE | 5 | 0.85 | 0.05 | 4 | | 4 | 1010 | 4 | |
| | | | | | | | | | |
| SEDGEWICK | | | | | | | | | |
| VIKING | 3 | 0.75 | 0.05 | 2 | | 2 | 1000 | 2 | |
| BASAL MANNVILLE A | 19 | 0.85 | 0.05 | 16 | | 16 | 990 | 16 | 2310 |
| MANNVILLE (OTHER) | 10 | 0.85 | 0.05 | 8 | | 8 | 990 | 8 | |
| | | | | | | | | | |
| SETU LAKE | | | | | | | | | |
| VIKING | 1 | 0.75 | 0.05 | 1 | | 1 | 1000 | 1 | |
| MANNVILLE | 14 | 0.85 | 0.05 | 11 | 2 | 9 | 1000 | 9 | |
| | | | | | | | | | |
| SEPTEMBER LAKE | | | | | | | | | |
| MANNVILLE | 12 | 0.75 | 0.05 | 8 | | 8 | 1030 | 8 | |
| MANNVILLE ASSOC | 1 | 0.75 | 0.05 | 1 | | 1 | 1030 | 1 | |
| WABAMUN | 2 | 0.75 | 0.05 | 1 | | 1 | 940 | 1 | |
| | | | | | | | | | |
| SEXSMITH | | | | | | | | | |
| DUNVEGAN | 8 | 0.80 | 0.05 | 6 | 2 | 4 | 1000 | 4 | |
| | | | | | | | | | |
| SIBBALD | | | | | | | | | |
| VIKING A | 28 | 0.80 | 0.05 | 21 | 15 | 6 | 990 | 6 | 9870 |
| VIKING (OTHER) | 8 | 0.80 | 0.05 | 6 | | 6 | 990 | 6 | |
| BASAL COLORADO A | 13 | 0.80 | 0.05 | 10 | | 10 | 990 | 10 | 4210 |
| BANFF | 1 | 0.80 | 0.05 | 1 | | 1 | 1050 | 1 | |
| | | | | | | | | | |
| SIMONETTE | | | | | | | | | |
| PEACE RIVER | 9 | 0.90 | 0.05 | 7 | | 7 | 1050 | 7 | |
| CADOMIN A | 13 | 0.85 | 0.05 | 10 | | 10 | 1060 | 11 | 1500 |
| WABAMUN A | 34 | 0.85 | 0.35 | 19 | | 19 | 1070 | 20 | 250 |
| WABAMUN (OTHER) | 14 | 0.85 | 0.35 | 8 | | 8 | 1070 | 9 | |
| | | | | | | | | | |
| D-3 SOLN | 270 | 0.55 | 0.40 | 89 | 3 | 86 | 1020 | 88 | |
| | | | | | | | | | |
| SMITH COULEE | | | | | | | | | |
| BOW ISLAND A | 32 | 0.85 | 0.05 | 26 | 25 | 1 | 930 | 1 | |
| | | | | | | | | | |
| STANDARD | | | | | | | | | |
| VIKING A | 26 | 0.80 | 0.05 | 20 | | 20 | 1000 | 20 | 5550 |
| | | | | | | | | | |
| STANMORE | | | | | | | | | |
| VIKING A | 48 | 0.80 | 0.05 | 36 | | 36 | 1000 | 36 | 14890 |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| | | | | | | | | | 1957 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 3710 | 1952 | 1962 CIGOL |
| 33 | 0.20 | 0.25 | 1360 | 120 | 0.85 | 0.67 | 3800 | 1952 | 1964 |
| | | | | | | | | | 1964 |
| | | | | | | | | | 1966 LOCAL UTILITY |
| | | | | | | | | | 1968 NUL |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1965 NUL |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 9750 | 1954 | 1970 CWNG |
| 219 | 0.03 | 0.15 | 2770 | 135 | 0.78 | 0.66 | 8350 | 1954 | 1969 WESTCOAST |
| 6 | 0.26 | 0.35 | 940 | 85 | 0.88 | 0.57 | 2650 | 1950 | 1969 TCPL |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1968 TCPL |
| | | | | | | | | | 1956 |
| 11 | 0.30 | 0.20 | 980 | 95 | 0.86 | 0.64 | 2940 | 1954 | 1968 TCPL |
| | | | | | | | | | 1956 |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1963 TCPL |
| | | | | | | | | | 1966 CONSIDERED BEYOND |
| | | | | | | | | | 1966 ECONOMIC REACH |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1969 LOCAL UTILITY |
| 6 | 0.22 | 0.30 | 1000 | 90 | 0.89 | 0.58 | 2530 | 1951 | 1966 TCPL |
| | | | | | | | | | 1960 |
| 8 | 0.15 | 0.30 | 1110 | 90 | 0.87 | 0.61 | 2700 | 1953 | 1960 |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1957 |
| 17 | 0.09 | 0.35 | 2970 | 165 | 0.85 | 0.66 | 8110 | 1960 | 1968 |
| 154 | 0.08 | 0.15 | 4950 | 220 | 0.87 | 0.81 | 11240 | 1959 | 1966 CUL AND A&S |
| | | | | | | | | | 1967 |
| | | | | | | | 11580 | 1958 | 1966 CUL AND A&S |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 2050 | 1948 | 1967 CMG |
| 8 | 0.20 | 0.30 | 1290 | 85 | 0.84 | 0.63 | 4180 | 1956 | 1963 TCPL |
| 6 | 0.27 | 0.40 | 1060 | 90 | 0.87 | 0.61 | 2860 | 1961 | 1970 |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 POOL OR ZONE | 2 INITIAL GAS IN PLACE BCF | 3 POOL RECOVERY FRACTION | 4 SURFACE LOSS FRACTION | 5 INITIAL MARKETABLE GAS BCF | 6 MARKETABLE GAS PRODUCED AUG. 31/70 BCF | 7 REMAINING MARKETABLE GAS AUG. 31/70 BCF | 8 GROSS HEATING VALUE BTU/CU FT | 9 REMAINING MARKETABLE GAS AT 1000 BTU BCF | 10 AREA ACRES |
|---|---|---|---|---|---|---|---|---|---|
| STANMORE (CONTINUED) | | | | | | | | | |
| VIKING (OTHER) | 4 | 0.80 | 0.05 | 3 | | 3 | 1000 | 3 | |
| | | | | | | | | | |
| STEEP CREEK | | | | | | | | | |
| GETHING | 6 | 0.85 | 0.05 | 5 | | 5 | 1020 | 5 | |
| TRIASSIC | 9 | 0.85 | 0.10 | 7 | | 7 | 1030 | 7 | |
| PERMO-PENN 26-66-7 | 17 | 0.90 | 0.20 | 12 | | 12 | 1030 | 12 | 1100 |
| | | | | | | | | | |
| STETTLER | | | | | | | | | |
| VIKING | 3 | 0.80 | 0.05 | 2 | | 2 | 1020 | 2 | |
| MANNVILLE | 4 | 0.80 | 0.05 | 3 | | 3 | 1090 | 3 | |
| D-2 SOLN | 21 | 0.30 | 0.90 | 1 | | 1 | 1130 | 1 | |
| D-3 SOLN | 14 | 0.55 | 0.95 | 1 | | 1 | 1140 | 1 | |
| | | | | | | | | | |
| STIRLING | | | | | | | | | |
| BOW ISLAND A | 16 | 0.80 | 0.05 | 12 | | 12 | 1000 | 12 | 9590 |
| | | | | | | | | | |
| STOLBERG | | | | | | | | | |
| RUNDLE A | 86 | 0.90 | 0.10 | 70 | | 70 | 1040 | 73 | 1480 |
| | | | | | | | | | |
| STRACHAN | | | | | | | | | |
| D-3 A | 2420 | 0.88 | 0.20 | 1700 | | 1700 | 1100 | 1870 | 5190 |
| D-3 B | 85 | 0.88 | 0.20 | 60 | | 60 | 1100 | 66 | |
| | | | | | | | | | |
| STRATHMORE | | | | | | | | | |
| BELLY RIVER | 14 | 0.80 | 0.05 | 11 | 5 | 6 | 1000 | 6 | |
| VIKING | 9 | 0.80 | 0.05 | 7 | | 7 | 1000 | 7 | |
| RUNDLE | 2 | 0.80 | 0.05 | 1 | | 1 | 1000 | 1 | |
| | | | | | | | | | |
| STROME | | | | | | | | | |
| MANNVILLE | 9 | 0.80 | 0.10 | 7 | | 7 | 1030 | 7 | |
| | | | | | | | | | |
| STURGEON LAKE | | | | | | | | | |
| GETHING | 13 | 0.85 | 0.05 | 10 | | 10 | 1000 | 10 | |
| GILWOOD | 1 | 0.85 | 0.15 | 1 | | 1 | 1000 | 1 | |
| | | | | | | | | | |
| STURGEON LAKE SOUTH | | | | | | | | | |
| GETHING | 18 | 0.85 | 0.05 | 14 | | 14 | 1000 | 14 | |
| TRIASSIC ASSOC | 3 | 0.85 | 0.10 | 2 | | 2 | 1180 | 2 | |
| TRIASSIC SOLN | 22 | 0.65 | 0.70 | 4 | | 4 | 1180 | 5 | |
| PERMO-PENN | 11 | 0.85 | 0.05 | 9 | | 9 | 1030 | 9 | |
| | | | | | | | | | |
| D-1 | 4 | 0.90 | 0.20 | 3 | 1 | 2 | 1070 | 2 | |
| D-3 ASSOC | 8 | 0.90 | 0.25 | 5 | | 5 | 1080 | 5 | |
| D-3 ASSOC (OTHER) | 2 | 0.90 | 0.25 | 1 | | 1 | 1080 | 1 | |
| D-3 SOLN | 270 | 0.55 | 0.45 | 83 | 19 | 64 | 1080 | 69 | |
| | | | | | | | | | |
| SUNDRE | | | | | | | | | |
| MANNVILLE | 6 | 0.85 | 0.10 | 4 | | 4 | 1020 | 4 | |
| MANNVILLE ASSOC | 10 | 0.90 | 0.10 | 8 | | 8 | 1020 | 8 | |
| RUNDLE A ASSOC | 21 | 0.85 | 0.15 | 15 | | 15 | 1060* | 16 | 1660 |
| RUNDLE A SOLN | 59 | 0.40 | 0.50 | 12 | 7 | 5 | 1060* | 5 | |
| | | | | | | | | | |
| RUNDLE SOLN (OTHER) | 13 | 0.60 | 0.50 | 4 | 1 | 3 | 1060* | 3 | |
| | | | | | | | | | |
| SUNNYNOOK | | | | | | | | | |
| VIKING | 1 | 0.75 | 0.05 | 1 | | 1 | 1020 | 1 | |
| MANNVILLE | 16 | 0.85 | 0.05 | 13 | 1 | 12 | 1020 | 12 | |
| | | | | | | | | | |
| SUPERBA | | | | | | | | | |
| VIKING | 2 | 0.75 | 0.05 | 1 | | 1 | 990 | 1 | |
| | | | | | | | | | |
| SWALWELL | | | | | | | | | |
| VIKING | 6 | 0.80 | 0.05 | 5 | | 5 | 1000 | 5 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| | | | | | | | | | 1970 |
| | | | | | | | | | 1961 CONSIDERED BEYOND |
| | | | | | | | | | 1961 ECONOMIC REACH |
| 35 | 0.06 | 0.30 | 4350 | 240 | 0.91 | 0.66 | 10470 | 1956 | 1961 |
| | | | | | | | | | 1963 CWNG |
| | | | | | | | | | 1970 |
| | | | | | | | | | 1966 CWNG |
| | | | | | | | | | 1966 CWNG |
| 8 | 0.20 | 0.35 | 485 | 80 | 0.94 | 0.58 | 2580 | 1957 | 1970 CWNG |
| 122 | 0.05 | 0.20 | 5100 | 200 | 0.99 | 0.64 | 12730 | 1957 | 1958 |
| 414 | 0.09 | 0.10 | 7150 | 255 | 1.15 | 0.74 | 13500 | 1967 | 1970 |
| | | CONFIDENTIAL | | | | | | | 1970 |
| | | | | | | | | | 1963 CWNG |
| | | | | | | | | | 1963 |
| | | | | | | | | | 1963 |
| | | | | | | | | | 1969 LOCAL UTILITY |
| | | | | | | | | | 1967 CONSIDERED BEYOND |
| | | | | | | | | | 1967 ECONOMIC REACH |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1969 A&S AND CUL |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1967 CUL |
| | | | | | | | | | 1961 |
| | | | | | | | | | 1964 |
| | | | | | | | 8850 | 1953 | 1965 A&S AND CUL |
| | | | | | | | | | 1964 TCPL |
| | | | | | | | | | 1966 |
| 16 | 0.10 | 0.20 | 3670 | 200 | 0.90 | 0.65 | 9050 | 1955 | 1964 |
| | | | | | | | 9050 | 1955 | 1965 A&S |
| | | | | | | | | | 1965 A&S |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1966 TCPL |
| | | | | | | | | | 1970 TCPL |
| | | | | | | | | | 1966 |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU FT | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| SWALWELL (CONTINUED) | | | | | | | | | |
| PEKISKO A ASSOC | 43 | 0.85 | 0.05 | 35 | | 35 | 1100 | 39 | 4000 |
| WINTERBURN ASSOC | 1 | 0.85 | 0.15 | 1 | | 1 | 1160 | 1 | |
| SWAN HILLS | | | | | | | | | |
| GETHING | 2 | 0.90 | 0.05 | 1 | | 1 | 1050 | 1 | |
| BH LK A & B SOLN | 1020 | 0.45 | 0.35 | 300 | 29 | 271 | 1200* | 325 | |
| SWAN HILLS SOUTH | | | | | | | | | |
| BH LK A & B SOLN | 570 | 0.45 | 0.30 | 180 | 23 | 157 | 1120* | 176 | |
| SYLVAN LAKE | | | | | | | | | |
| VIKING | 4 | 0.85 | 0.05 | 3 | | 3 | 1010* | 3 | |
| GLAUCONITIC A | 210 | 0.85 | 0.10 | 170 | 49 | 121 | 1100* | 133 | 9290 |
| OSTRACOD B | 29 | 0.85 | 0.10 | 22 | 2 | 20 | 1100* | 22 | 2230 |
| LOWER MANNVILLE A | 35 | 0.85 | 0.10 | 27 | 8 | 19 | 1100* | 21 | 2830 |
| LOWER MANNVILLE C | 21 | 0.85 | 0.09 | 16 | 12 | 4 | 1100* | 4 | 2260 |
| LOWER MANNVILLE D | 28 | 0.85 | 0.06 | 23 | 3 | 20 | 1100* | 22 | 2620 |
| MANNVILLE (OTHER) | 38 | 0.85 | 0.10 | 28 | 1 | 27 | 1100* | 30 | |
| MANNVILLE ASSOC | 3 | 0.80 | 0.10 | 2 | | 2 | 1100* | 2 | |
| JURASSIC L | 14 | 0.85 | 0.15 | 10 | | 10 | 1020* | 10 | 1130 |
| JURASSIC (OTHER) | 14 | 0.85 | 0.10 | 11 | 2 | 9 | 1020* | 9 | |
| JURASSIC A ASSOC | 46 | 0.80 | 0.10 | 33 | | 33 | 1020* | 34 | 3010 |
| JUR ASSOC (OTHER) | 3 | 0.85 | 0.10 | 2 | | 2 | 1020* | 2 | |
| JURASSIC SOLN | 23 | 0.60 | 0.45 | 8 | | 8 | 1100* | 9 | |
| ELKTON-SHUNDA A | 24 | 0.85 | 0.10 | 18 | 10 | 8 | 1100* | 9 | 3380 |
| SHUNDA B | 22 | 0.85 | 0.10 | 16 | | 16 | 1100* | 18 | 1790 |
| RUNDLE (OTHER) | 30 | 0.85 | 0.10 | 22 | | 22 | 1100* | 24 | |
| PEKISKO B ASSOC | 18 | 0.80 | 0.15 | 13 | | 13 | 1100* | 14 | 1410 |
| RUNDLE ASSOC (OTHER) | 7 | 0.80 | 0.15 | 5 | | 5 | 1100* | 6 | |
| PEKISKO B SOLN | 26 | 0.60 | 0.35 | 10 | | 10 | 1200* | 12 | |
| RUNDLE SOLN (OTHER) | 16 | 0.60 | 0.35 | 6 | | 6 | 1200* | 7 | |
| D-3 A ASSOC | 40 | 0.80 | 0.10 | 29** | | | | | 1800 |
| D-3 A SOLN | 15 | 0.65 | 0.45 | 5** | 5** | 29 | 1020* | 30 | |
| TABER SOUTH | | | | | | | | | |
| BOW ISLAND A | 17 | 0.70 | 0.05 | 11 | | 11 | 1000 | 11 | 12410 |
| BOW ISLAND (OTHER) | 8 | 0.80 | 0.05 | 5 | | 5 | 1000 | 5 | |
| TANGENT | | | | | | | | | |
| PEACE RIVER | 12 | 0.75 | 0.05 | 6 | | 6 | 1010 | 6 | |
| GETHING | 42 | 0.85 | 0.05 | 34 | | 34 | 1000 | 34 | |
| TRIASSIC | 25 | 0.85 | 0.05 | 20 | | 20 | 1180 | 24 | |
| TEHZE | | | | | | | | | |
| SULPHUR POINT SOLN | 1 | 0.65 | 0.25 | 1 | | 1 | 1100* | 1 | |
| MUSKEG SOLN | 3 | 0.65 | 0.25 | 2 | | 2 | 1150* | 2 | |
| KEG RIVER SOLN | 16 | 0.70 | 0.25 | 8 | | 8 | 1260* | 10 | |
| TELFORDVILLE | | | | | | | | | |
| MISSISSIPPIAN | 10 | 0.85 | 0.10 | 8 | | 8 | 1110 | 9 | |
| WABAMUN | 7 | 0.85 | 0.15 | 4 | | 4 | 1090 | 4 | |
| THORHILD | | | | | | | | | |
| MANNVILLE A | 12 | 0.85 | 0.05 | 10 | | 10 | 1000 | 10 | 2550 |
| MANNVILLE (OTHER) | 1 | 0.85 | 0.05 | 1 | | 1 | 1000 | 1 | |
| THREE HILLS CREEK | | | | | | | | | |
| BELLY RIVER | 8 | 0.85 | 0.05 | 7 | | 7 | 970 | 7 | |
| VIKING | 8 | 0.80 | 0.05 | 6 | | 6 | 1000 | 6 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| 32 | 0.08 | 0.25 | 1790 | 145 | 0.83 | 0.69 | 5300 | 1963 | 1966 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1962 |
| | | | | | | | 8300 | 1957 | 1969 NUL |
| | | | | | | | 7450 | 1959 | 1966 NUL |
| | | | | | | | | | 1969 |
| 31 | 0.13 | 0.30 | 2420 | 145 | 0.79 | 0.73 | 6950 | 1953 | 1969 TCPL |
| 13 | 0.17 | 0.30 | 2950 | 160 | 0.83 | 0.68 | 7790 | 1963 | 1969 TCPL |
| 18 | 0.13 | 0.30 | 2480 | 150 | 0.81 | 0.70 | 7150 | 1955 | 1969 TCPL |
| 13 | 0.13 | 0.30 | 2450 | 150 | 0.80 | 0.71 | 7140 | 1953 | 1969 TCPL |
| 16 | 0.13 | 0.30 | 2410 | 145 | 0.81 | 0.7[illegible] | 6890 | 1953 | 1969 TCPL |
| | | | | | | | | | 1969 TCPL |
| | | | | | | | | | 1969 |
| 16 | 0.14 | 0.30 | 2440 | 150 | 0.80 | 0.70 | 7250 | 1962 | 1969 |
| | | | | | | | | | 1969 TCPL |
| 21 | 0.14 | 0.30 | 2500 | 160 | 0.83 | 0.69 | 7410 | 1962 | 1969 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1965 |
| 17 | 0.07 | 0.25 | 2430 | 150 | 0.80 | 0.70 | 7150 | 1955 | 1969 TCPL |
| 23 | 0.10 | 0.25 | 2450 | 150 | 0.81 | 0.70 | 7180 | 1953 | 1969 |
| | | | | | | | | | 1969 |
| 16 | 0.14 | 0.25 | 2460 | 150 | 0.80 | 0.71 | 7260 | 1962 | 1969 |
| | | | | | | | | | 1969 |
| | | | | | | | 7320 | 1962 | 1969 |
| | | | | | | | | | 1965 |
| 41 | 0.07 | 0.15 | 3470 | 210 | 0.90 | 0.70 | 9400 | 1961 | 1969 |
| | | | | | | | | | 1964 TCPL |
| 6 | 0.20 | 0.30 | 540 | 80 | 0.94 | 0.60 | 2300 | 1963 | 1965 CONSIDERED BEYOND |
| | | | | | | | | | 1961 ECONOMIC REACH |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1969 CONSIDERED BEYOND |
| | | | | | | | | | 1968 ECONOMIC REACH |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1957 |
| | | | | | | | | | 1966 |
| 12 | 0.25 | 0.30 | 740 | 85 | 0.91 | 0.60 | 2570 | 1963 | 1966 LOCAL UTILITY |
| | | | | | | | | | 1964 |
| | | | | | | | | | 1963 |
| | | | | | | | | | 1963 |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU FT | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| THREE HILLS CREEK (CONTINUED) | | | | | | | | | |
| PEKISKO | 190 | 0.85 | 0.05 | 150 | 27 | 123 | 1120* | 138 | 43770 |
| TROCHU | | | | | | | | | |
| MANNVILLE | 14 | 0.75 | 0.10 | 10 | | 10 | 1030 | 10 | |
| TURIN | | | | | | | | | |
| BOW ISLAND | 14 | 0.80 | 0.05 | 10 | | 10 | 970 | 10 | |
| MANNVILLE | 17 | 0.90 | 0.15 | 13 | | 13 | 1020 | 13 | |
| MANNVILLE ASSOC | 10 | 0.85 | 0.15 | 7 | | 7 | 1020 | 7 | |
| TURNER VALLEY | | | | | | | | | |
| RUNDLE ASSOC | 1570 | 0.90 | 0.70 | 410 | 302 | 108 | 1110* | 120 | |
| RUNDLE SOLN | 1400 | 0.55 | 0.55 | 350 | 289 | 61 | 1110* | 68 | |
| TWEEDIE | | | | | | | | | |
| VIKING | 14 | 0.80 | 0.05 | 10 | 2 | 8 | 1000 | 8 | |
| GRAND RAPIDS A | 15 | 0.80 | 0.05 | 11 | 2 | 9 | 1040 | 9 | 9290 |
| GLAUC A & MCMURRAY A | 57 | 0.80 | 0.05 | 43 | 5 | 38 | 1040 | 40 | 22400 |
| MANNVILLE (OTHER) | 7 | 0.80 | 0.05 | 5 | 1 | 4 | 1040 | 4 | |
| TWINING NORTH | | | | | | | | | |
| MANNVILLE | 6 | 0.80 | 0.05 | 5 | | 5 | 1100 | 6 | |
| RUNDLE | 1 | 0.80 | 0.05 | 1 | | 1 | 1110 | 1 | |
| RUNDLE ASSOC | 37 | 0.80 | 0.05 | 28 | | 28 | 1110 | 31 | 4340 |
| RUNDLE ASSOC (OTHER) | 1 | 0.80 | 0.05 | 1 | | 1 | 1110 | 1 | |
| RUNDLE SOLN | 15 | 0.60 | 0.15 | 8 | | 8 | 1110 | 9 | |
| TWO CREEK | | | | | | | | | |
| TRIASSIC 11-63-16 | 12 | 0.90 | 0.05 | 10 | | 10 | 1090 | 11 | 1100 |
| UKALTA | | | | | | | | | |
| MANNVILLE | 1 | 0.75 | 0.05 | 1 | | 1 | 1020 | 1 | |
| WABAMUN-GRAMINIA A | 42 | 0.75 | 0.05 | 30 | | 30 | 1100* | 33 | |
| USONA | | | | | | | | | |
| MANNVILLE 11-45-27 | 12 | 0.90 | 0.05 | 10 | | 10 | 1110 | 11 | 470 |
| VERGER | | | | | | | | | |
| BOW ISLAND | 6 | 0.80 | 0.05 | 4 | | 4 | 1100 | 4 | |
| BASAL COLORADO A | 12 | 0.85 | 0.05 | 10 | 3 | 7 | 1010 | 7 | 10130 |
| BSL COLORADO (OTHER) | 17 | 0.80 | 0.05 | 13 | 1 | 12 | 1010 | 12 | |
| MANNVILLE | 19 | 0.85 | 0.10 | 15 | 3 | 12 | 1050 | 13 | |
| RUNDLE | 2 | 0.85 | 0.05 | 2 | | 2 | 1070 | 2 | |
| VIKING-KINSELLA | | | | | | | | | |
| VIKING | 960 | 0.85 | 0.05 | 770 | 430 | 340 | 1000 | 340 | 40800 |
| WAINWRIGHT | 41 | 0.80 | 0.05 | 31 | 4 | 27 | 1000 | 27 | 6750 |
| MANNVILLE (OTHER) | 40 | 0.80 | 0.05 | 30 | 16 | 14 | 1000 | 14 | |
| D-2 | 9 | 0.75 | 0.05 | 7 | 5 | 2 | 990* | 2 | |
| CAMROSE | 8 | 0.80 | 0.05 | 7 | 1 | 6 | 990* | 6 | |
| VIRGINIA HILLS | | | | | | | | | |
| MANNVILLE | 9 | 0.90 | 0.05 | 8 | | 8 | 1040 | 8 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS | |
| 27 | 0.05 | 0.35 | 1720 | 150 | 0.85 | 0.70 | 5770 | 1953 | 1968 TCPL | 2 |
| | | | | | | | | | 1968 | 5 |
| | | | | | | | | | 1968 | 8 |
| | | | | | | | | | 1968 | 9 |
| | | | | | | | | | 1968 | 10 |
| | | | | | | | 6000 | 1928 | 1953 CWNG AND LOCAL | 13 |
| | | | | | | | 8390 | 1928 | 1953 UTILITY | 14 |
| | | | | | | | | | 1968 GREAT CANADIAN OIL | 17 |
| | | | | | | | | | SANDS LIMITED | 18 |
| 6 | 0.38 | 0.30 | 320 | 55 | 0.95 | 0.56 | 900 | 1961 | 1969 GREAT CANADIAN | 19 |
| | | | | | | | | | OIL SANDS LIMITED | 20 |
| 16 | 0.27 | 0.50 | 360 | 60 | 0.95 | 0.57 | 1410 | 1961 | 1969 GREAT CANADIAN | 22 |
| | | | | | | | | | OIL SANDS LIMITED | 23 |
| | | | | | | | | | 1968 GREAT CANADIAN OIL | 24 |
| | | | | | | | | | SANDS LIMITED | 25 |
| | | | | | | | | | 1964 | 28 |
| | | | | | | | | | 1964 | 29 |
| 36 | 0.07 | 0.30 | 1660 | 145 | 0.85 | 0.68 | 5370 | 1961 | 1964 | 30 |
| | | | | | | | | | 1964 | 31 |
| | | | | | | | | | 1965 | 33 |
| 12 | 0.20 | 0.30 | 2200 | 170 | 0.88 | 0.66 | 6590 | 1956 | 1956 CONSIDERED BEYOND | 36 |
| | | | | | | | | | ECONOMIC REACH | 37 |
| | | | | | | | | | 1969 | 40 |
| | | CONFIDENTIAL | | | | | | | 1969 | 41 |
| 32 | 0.22 | 0.30 | 1660 | 140 | 0.84 | 0.71 | 5110 | 1954 | 1955 CONSIDERED BEYOND | 44 |
| | | | | | | | | | ECONOMIC REACH | 45 |
| | | | | | | | | | 1964 TCPL | 48 |
| 2 | 0.21 | 0.40 | 1280 | 90 | 0.86 | 0.60 | 3060 | 1959 | 1969 TCPL | 49 |
| | | | | | | | | | 1969 TCPL | 50 |
| | | | | | | | | | 1968 TCPL | 51 |
| | | | | | | | | | 1964 TCPL | 53 |
| 5 | 0.23 | 0.20 | 810 | 75 | 0.90 | 0.60 | 2080 | 1914 | 1966 NUL AND LOCAL | 56 |
| | | | | | | | | | UTILITY | 57 |
| 13 | 0.26 | 0.25 | 740 | 85 | 0.91 | 0.59 | 2330 | 1951 | 1966 NUL | 58 |
| | | | | | | | | | 1966 NUL | 59 |
| | | | | | | | | | 1966 NUL | 61 |
| | | | | | | | | | 1961 NUL | 62 |
| | | | | | | | | | 1962 | 65 |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU.FT. | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| VIRGINIA HILLS (CONTINUED) | | | | | | | | | |
| BELLOY A | 63 | 0.80 | 0.10 | 45 | | 45 | 1060 | 48 | 5290 |
| BEAVERHILL LAKE SOLN | 220 | 0.40 | 0.40 | 54 | 8 | 46 | 1070* | 49 | |
| SLAVE POINT | 4 | 0.80 | 0.20 | 2 | | 2 | 1070 | 2 | |
| VIRGO | | | | | | | | | |
| SLAVE POINT | 11 | 0.90 | 0.10 | 9 | | 9 | 1050* | 9 | |
| SULPHUR POINT | 33 | 0.90 | 0.15 | 25 | | 25 | 1050* | 26 | |
| MUSKEG | 13 | 0.90 | 0.15 | 10 | | 10 | 1050* | 11 | |
| MUSKEG ASSOC | 7 | 0.85 | 0.15 | 5 | | 5 | 1050* | 5 | |
| MUSKEG SOLN | 3 | 0.60 | 0.25 | 1 | | 1 | 1100* | 1 | |
| KEG RIVER | 8 | 0.85 | 0.15 | 6 | | 6 | 1100* | 7 | |
| KEG RIVER HH ASSOC | 13 | 0.90 | 0.20 | 10 | | 10 | 1150* | 12 | 160 |
| KEG R ASSOC (OTHER) | 56 | 0.90 | 0.20 | 41 | | 41 | 1150* | 47 | |
| KEG RIVER SOLN | 50 | 0.70 | 0.25 | 26 | | 26 | 1200* | 31 | |
| VULCAN | | | | | | | | | |
| U MANN B &BSL MANN A | 17 | 0.85 | 0.15 | 13 | 2 | 11 | 1050 | 12 | 2320 |
| MANNVILLE (OTHER) | 3 | 0.85 | 0.15 | 2 | 1 | 1 | 1050 | 1 | |
| TURNER VALLEY A | 19 | 0.80 | 0.20 | 13 | 1 | 12 | 1050 | 13 | 2440 |
| RUNDLE (OTHER) | 4 | 0.80 | 0.20 | 2 | | 2 | 1050 | 2 | |
| WAINWRIGHT | | | | | | | | | |
| VIKING | 5 | 0.80 | 0.05 | 4 | | 4 | 980 | 4 | |
| MANNVILLE | 18 | 0.85 | 0.05 | 14 | 1 | 13 | 940 | 12 | |
| MANNVILLE ASSOC | 8 | 0.75 | 0.05 | 5 | | 5 | 940 | 5 | |
| WASKAHIGAN | | | | | | | | | |
| CARDIUM | 3 | 0.80 | 0.05 | 2 | | 2 | 1060 | 2 | |
| DUNVEGAN A | 130 | 0.80 | 0.05 | 90 | | 90 | 1110 | 100 | 26980 |
| PEACE RIVER | 5 | 0.85 | 0.05 | 4 | | 4 | 1070 | 4 | |
| WATERTON | | | | | | | | | |
| RUNDLE A & H | 77 | 0.80 | 0.30 | 46 | 5 | 41 | 1040* | 43 | |
| RUNDLE C | 350 | 0.75 | 0.45 | 150 | 12 | 138 | 1040* | 144 | 13390 |
| RUNDLE D & E | 470 | 0.80 | 0.50 | 190 | 48 | 142 | 1040* | 148 | |
| RUNDLE I | 21 | 0.85 | 0.30 | 12 | | 12 | 1040* | 12 | 500 |
| RUNDLE (OTHER) | 7 | 0.85 | 0.30 | 4 | | 4 | 1040* | 4 | |
| RUNDLE-WABAMUN A | 3080 | 0.85 | 0.35 | 1700 | 195 | 1505 | 1020 | 1535 | |
| WABAMUN B | 36 | 0.80 | 0.20 | 25 | 11 | 14 | 1020 | 14 | |
| WABAMUN 31-6-3 | 40 | 0.85 | 0.15 | 29 | | 29 | 1020 | 30 | 2000 |
| WATTS | | | | | | | | | |
| VIKING | 5 | 0.85 | 0.07 | 4 | 2 | 2 | 1030* | 2 | |
| MISSISSIPPIAN | 1 | 0.80 | 0.05 | 1 | | 1 | 1070 | 1 | |
| WAYNE-ROSEDALE | | | | | | | | | |
| BELLY RIVER | 9 | 0.80 | 0.05 | 7 | 1 | 6 | 1000 | 6 | |
| VIKING A | 170 | 0.80 | 0.05 | 130 | 34 | 96 | 1090* | 105 | 49900 |
| VIKING B | 24 | 0.80 | 0.05 | 18 | 5 | 13 | 1090* | 14 | 9940 |
| VIKING (OTHER) | 26 | 0.80 | 0.05 | 20 | 1 | 19 | 1090* | 21 | |
| GLAUCONITIC A | 180 | 0.85 | 0.07 | 140 | 34 | 106 | 1120 | 119 | 19840 |
| MANNVILLE (OTHER) | 90 | 0.85 | 0.05 | 71 | 14 | 57 | 1120 | 64 | |
| MANNVILLE ASSOC | 6 | 0.85 | 0.05 | 5 | 1 | 4 | 1120 | 4 | |
| WEST DRUMHELLER | | | | | | | | | |
| MANNVILLE | 4 | 0.85 | 0.05 | 3 | | 3 | 1100 | 3 | |
| RUNDLE | 1 | 0.80 | 0.05 | 1 | | 1 | 1040 | 1 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60°F.)

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| 18 | 0.16 | 0.25 | 1950 | 170 | 0.85 | 0.68 | 6140 | 1961 | 1970 |
| | | | | | | | 9290 | 1957 | 1966 NUL |
| | | | | | | | | | 1962 |
| | | | | | | | | | 1968 CONSIDERED BEYOND |
| | | | | | | | | | 1968 ECONOMIC REACH |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1969 |
| 155 | 0.08 | 0.10 | 2240 | 155 | 0.80 | 0.79 | 5040 | 1968 | 1968 |
| | | | | | | | | | 1969 |
| 10 | 0.15 | 0.35 | 2320 | 125 | 0.85 | 0.76 | 5880 | 1956 | 1968 TCPL |
| | | | | | | | | | 1968 TCPL |
| 13 | 0.10 | 0.40 | 2440 | 145 | 0.82 | 0.76 | 5940 | 1960 | 1966 TCPL |
| | | | | | | | | | 1966 |
| | | | | | | | | | 1959 LOCAL UTILITY |
| | | | | | | | | | 1960 LOCAL UTILITY |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1967 |
| 12 | 0.16 | 0.45 | 1490 | 145 | 0.85 | 0.67 | 5080 | 1959 | 1969 |
| | | | | | | | | | 1967 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 10370 | 1960 | 1968 A&S |
| 56 | 0.05 | 0.25 | 5200 | 190 | 1.00 | 0.94 | 11600 | 1957 | 1968 A&S |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 10700 | 1957 | 1968 A&S |
| 85 | 0.05 | 0.25 | 4880 | 180 | 0.90 | 0.76 | 11390 | 1970 | 1970 |
| | | | | | | | | | 1964 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 10350 | 1959 | 1968 A&S |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 13400 | 1958 | 1968 A&S |
| 58 | 0.05 | 0.20 | 4020 | 205 | 0.91 | 0.66 | 12170 | 1964 | 1966 |
| | | | | | | | | | 1969 LOCAL UTILITY |
| | | | | | | | | | 1955 |
| | | | | | | | | | 1969 CWNG |
| 6 | 0.20 | 0.30 | 1170 | 100 | 0.85 | 0.64 | 3890 | 1953 | 1969 TCPL AND CWNG |
| 9 | 0.17 | 0.60 | 1170 | 100 | 0.85 | 0.64 | 3870 | 1954 | 1969 TCPL |
| | | | | | | | | | 1969 TCPL, CWNG AND LOCAL UTILITY |
| 13 | 0.20 | 0.30 | 1460 | 105 | 0.81 | 0.67 | 4370 | 1953 | 1970 TCPL, CWNG AND LOCAL UTILITY |
| | | | | | | | | | 1969 TCPL, CWNG AND LOCAL UTILITY |
| | | | | | | | | | 1969 TCPL |
| | | | | | | | | | 1954 |
| | | | | | | | | | 1956 |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU.FT. | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| WEST DRUMHELLER (CONTINUED) | | | | | | | | | |
| D-2 ASSOC | 5 | 0.90 | 0.15 | 4 | | 4 | 1090 | 4 | |
| WESTEROSE | | | | | | | | | |
| MANNVILLE | 7 | 0.80 | 0.05 | 5 | | 5 | 1020 | 5 | |
| NISKU | 2 | 0.90 | 0.05 | 1 | | 1 | 1050 | 1 | |
| D-3 ASSOC | 130 | 0.90 | 0.20 | 90 | -7 | 97 | 1050* | 102 | 1220 |
| D-3 SOLN | 150 | 0.70 | 0.20 | 83 | 12 | 71 | 1050* | 75 | |
| WESTEROSE SOUTH | | | | | | | | | |
| WABAMUN | 8 | 0.90 | 0.25 | 6 | | 6 | 1090 | 7 | |
| D-3 A | 1850 | 0.90 | 0.20 | 1350 | 484 | 866 | 1060* | 918 | 11790 |
| WESTLOCK | | | | | | | | | |
| VIKING | 320 | 0.80 | 0.05 | 250 | 86 | 164 | 1060 | 174 | 75270 |
| VIKING (OTHER) | 8 | 0.80 | 0.05 | 6 | | 6 | 1060 | 6 | |
| MANNVILLE | 4 | 0.85 | 0.05 | 3 | | 3 | 1100* | 3 | |
| WEST PRAIRIE | | | | | | | | | |
| CADOTTE 18-72-17 | 17 | 0.90 | 0.05 | 15 | | 15 | 1040 | 16 | 1100 |
| BLUESKY | 6 | 0.90 | 0.05 | 5 | | 5 | 990 | 5 | |
| WHISKEY | | | | | | | | | |
| RUNDLE A | 160 | 0.85 | 0.25 | 100 | | 100 | 1110* | 111 | 2130 |
| WHITECOURT | | | | | | | | | |
| BELLY RIVER | 2 | 0.85 | 0.05 | 1 | | 1 | 1000 | 1 | |
| MANNVILLE | 14 | 0.80 | 0.10 | 10 | | 10 | 1050 | 11 | |
| JURASSIC E | 55 | 0.85 | 0.10 | 42 | | 42 | 1070 | 45 | 5130 |
| JURASSIC (OTHER) | 26 | 0.80 | 0.10 | 18 | | 18 | 1070 | 19 | |
| PEKISKO C | 13 | 0.85 | 0.10 | 10 | | 10 | 1130 | 11 | 830 |
| RUNDLE (OTHER) | 35 | 0.85 | 0.10 | 26 | | 26 | 1130 | 29 | |
| WHITELAW | | | | | | | | | |
| BLUESKY (OTHER) | 2 | 0.80 | 0.05 | 1 | | 1 | 1020 | 1 | |
| BLUESKY A & GETH A | 14 | 0.85 | 0.05 | 12 | 5 | 7 | 1020 | 7 | 2600 |
| GETHING B | 13 | 0.85 | 0.05 | 11 | 1 | 10 | 1020 | 10 | 3720 |
| TRIASSIC A | 21 | 0.85 | 0.05 | 16 | | 16 | 1090 | 17 | 5680 |
| TRIASSIC (OTHER) | 10 | 0.90 | 0.05 | 9 | | 9 | 1090 | 10 | |
| WILDCAT HILLS | | | | | | | | | |
| RUNDLE A | 1050 | 0.80 | 0.17 | 700 | 182 | 518 | 1050* | 544 | |
| WILDHORSE CREEK | | | | | | | | | |
| RUNDLE A | 160 | 0.85 | 0.20 | 110 | | 110 | 1010 | 111 | 1960 |
| WILDMERE | | | | | | | | | |
| MANNVILLE | 37 | 0.80 | 0.05 | 28 | 11 | 17 | 960* | 16 | |
| WILDUNN CREEK | | | | | | | | | |
| VIKING A | 19 | 0.60 | 0.05 | 11 | 1 | 10 | 1010 | 10 | 8810 |
| VIKING B | 16 | 0.70 | 0.05 | 11 | 4 | 7 | 1010 | 7 | 4080 |
| WILLESDEN GREEN | | | | | | | | | |
| BELLY RIVER E | 34 | 0.85 | 0.10 | 26 | | 26 | 1000 | 26 | 3790 |
| BELLY RIVER (OTHER) | 26 | 0.80 | 0.05 | 19 | | 19 | 1000 | 19 | |
| CARDIUM | 6 | 0.80 | 0.05 | 4 | | 4 | 1040* | 4 | |
| CARDIUM A ASSOC | 40 | 0.85 | 0.10 | 31** | | | | | 8490 |
| CARDIUM A SOLN | 460 | 0.40 | 0.60 | 74** | 10** | 95 | 1040* | 99 | |
| MANNVILLE | 19 | 0.85 | 0.15 | 14 | | 14 | 1100 | 15 | |

OF ALBERTA, AUGUST 31, 1970 (14.65 PSIA AND 60° F.)

| 11<br>AVERAGE PAY THICKNESS FEET | 12<br>POROSITY FRACTION | 13<br>LIQUID SATURATION FRACTION | 14<br>INITIAL PRESSURE PSIA | 15<br>RESERVOIR TEMPERATURE °F | 16<br>COMPRESS-IBILITY FACTOR FRACTION | 17<br>RAW GAS SPECIFIC GRAVITY | 18<br>AVERAGE WELL DEPTH FEET | 19<br>DISCOVERY YEAR | 20<br>DATE LAST REVIEWED, DISPOSITION AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 1968 |
| | | | | | | | | | 1953 |
| | | | | | | | | | 1959 |
| 200 | 0.06 | 0.15 | 2520 | 180 | 0.83 | 0.71 | 6990 | 1952 | 1959 |
| | | | | | | | 7230 | 1952 | 1966 TCPL |
| | | | | | | | | | 1961 |
| 249 | 0.09 | 0.10 | 2750 | 180 | 0.81 | 0.81 | 7640 | 1953 | 1969 TCPL |
| 13 | 0.19 | 0.35 | 840 | 95 | 0.90 | 0.58 | 2600 | 1949 | 1964 CIGOL & LOCAL |
| | | | | | | | | | UTILITY |
| | | | | | | | | | 1964 |
| | | | | | | | | | 1962 |
| 35 | 0.20 | 0.30 | 990 | 85 | 0.87 | 0.68 | 2580 | 1956 | 1956 CONSIDERED BEYOND |
| | | | | | | | | | 1956 ECONOMIC REACH |
| 136 | 0.06 | 0.25 | 3820 | 150 | 0.83 | 0.72 | 11820 | 1968 | 1969 |
| | | | | | | | | | 1963 |
| | | | | | | | | | 1963 |
| 23 | 0.18 | 0.50 | 1850 | 140 | 0.84 | 0.64 | 5070 | 1962 | 1969 |
| | | | | | | | | | 1968 TCPL |
| 48 | 0.09 | 0.45 | 1840 | 145 | 0.85 | 0.64 | 5080 | 1968 | 1968 TCPL |
| | | | | | | | | | 1968 |
| | | | | | | | | | 1961 |
| 14 | 0.21 | 0.45 | 1110 | 75 | 0.87 | 0.57 | 2900 | 1950 | 1966 LOCAL UTILITY |
| 6 | 0.20 | 0.25 | 1150 | 75 | 0.86 | 0.57 | 2180 | 1959 | 1966 LOCAL UTILITY |
| 5 | 0.21 | 0.30 | 1430 | 105 | 0.82 | 0.58 | 3240 | 1951 | 1966 |
| | | | | | | | | | 1957 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 9880 | 1958 | 1969 A&S |
| 123 | 0.08 | 0.15 | 3200 | 140 | 0.85 | 0.68 | 7380 | 1960 | 1968 |
| | | | | | | | | | 1953 NUL |
| 4 | 0.25 | 0.40 | 1110 | 90 | 0.86 | 0.61 | 3030 | 1952 | 1967 TCPL |
| 7 | 0.25 | 0.40 | 1130 | 90 | 0.87 | 0.59 | 3090 | 1952 | 1967 TCPL |
| 16 | 0.15 | 0.25 | 1600 | 145 | 0.82 | 0.70 | 5050 | 1967 | 1967 |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1961 |
| 6 | 0.10 | 0.25 | 3010 | 135 | 0.81 | 0.69 | 5980 | 1962 | 1970 |
| | | | | | | | 6190 | 1954 | 1969 A&S |
| | | | | | | | | | 1962 |

TABLE A-1 (CONTINUED).- ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU FT | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| WILLESDEN GREEN (CONTINUED) | | | | | | | | | |
| MANNVILLE ASSOC | 8 | 0.85 | 0.10 | 6 | | 6 | 1100 | 7 | |
| JURASSIC | 2 | 0.75 | 0.05 | 1 | | 1 | 1080 | 1 | |
| RUNDLE | 3 | 0.80 | 0.05 | 2 | | 2 | 1100 | 2 | |
| WILLINGDON | | | | | | | | | |
| VIKING | 4 | 0.85 | 0.05 | 3 | | 3 | 980 | 3 | |
| MANNVILLE | 16 | 0.75 | 0.05 | 12 | 4 | 8 | 990 | 8 | |
| D-3 | 12 | 0.80 | 0.05 | 9 | 8 | 1 | 1000* | 1 | |
| WILSON CREEK | | | | | | | | | |
| PEKISKO A | 51 | 0.85 | 0.10 | 39 | 4 | 35 | 1120* | 39 | 7900 |
| BANFF A | 15 | 0.85 | 0.15 | 11 | | 11 | 1120* | 12 | 1100 |
| WIMBORNE | | | | | | | | | |
| VIKING | 2 | 0.75 | 0.05 | 1 | | 1 | 1020 | 1 | |
| RUNDLE | 2 | 0.90 | 0.10 | 1 | | 1 | 1100 | 1 | |
| D-2 | 1 | 0.85 | 0.15 | 1 | | 1 | 1160 | 1 | |
| D-2 ASSOC | 6 | 0.85 | 0.15 | 4 | | 4 | 1160 | 5 | |
| D-3 A ASSOC | 360 | 0.70 | 0.25 | 190** | | | | | 15080 |
| D-3 A SOLN | 110 | 0.99 | 0.32 | 7** | 61** | 136 | 1000* | 136 | |
| WINDFALL | | | | | | | | | |
| VIKING A | 17 | 0.75 | 0.05 | 12 | | 12 | 1030 | 12 | 9980 |
| RUNDLE | 5 | 0.85 | 0.05 | 4 | 2 | 2 | 1040 | 2 | |
| D-3 A ASSOC | 710 | 0.80 | 0.30 | 400** | | | | | 11600 |
| D-3 A SOLN | 230 | 0.70 | 0.35 | 110** | 82** | 428 | 1080* | 462 | |
| WINNIFRED | | | | | | | | | |
| BOW ISLAND A | 25 | 0.85 | 0.05 | 20 | | 20 | 1000 | 20 | 22340 |
| BOW ISLAND (OTHER) | 1 | 0.80 | 0.05 | 1 | | 1 | 1000 | 1 | |
| WINTERING HILLS | | | | | | | | | |
| BELLY RIVER | 2 | 0.75 | 0.05 | 1 | | 1 | 1000 | 1 | |
| VIKING D | 12 | 0.90 | 0.05 | 10 | | 10 | 1010 | 10 | 1100 |
| VIKING (OTHER) | 16 | 0.85 | 0.05 | 13 | 4 | 9 | 1010 | 9 | |
| VIKING ASSOC | 2 | 0.85 | 0.05 | 1 | | 1 | 1010 | 1 | |
| MANNVILLE | 23 | 0.80 | 0.10 | 18 | 1 | 17 | 1090 | 19 | |
| LOWER MANN E ASSOC | 17 | 0.75 | 0.10 | 12 | 2 | 10 | 1090 | 11 | [illegible] |
| MANN ASSOC (OTHER) | 5 | 0.80 | 0.05 | 4 | | 4 | 1090 | 4 | |
| RUNDLE | 2 | 0.80 | 0.05 | 1 | | 1 | 1090 | 1 | |
| WIZARD LAKE | | | | | | | | | |
| BELLY RIVER | 2 | 0.75 | 0.05 | 1 | | 1 | 1050 | 1 | |
| VIKING | 1 | 0.85 | 0.05 | 1 | | 1 | 1070 | 1 | |
| BASAL QUARTZ A | 14 | 0.90 | 0.19 | 10 | 10 | □ 1 | 1120 | □ 1 | |
| MANNVILLE (OTHER) | 7 | 0.85 | 0.15 | 5 | 1 | 4 | 1120 | 4 | |
| D-2 ASSOC | 1 | 0.85 | 0.20 | 1 | | 1 | 1180 | 1 | |
| D-3 A SOLN | 230 | 0.65 | 0.25 | 110 | 26 | 84 | 1250 | 105 | |
| WOKING | | | | | | | | | |
| PEACE RIVER | 8 | 0.90 | 0.05 | 6 | 1 | 5 | 1040 | 5 | |
| SPIRIT RIVER | 3 | 0.80 | 0.05 | 2 | | 2 | 1040 | 2 | |
| BLUESKY | 4 | 0.80 | 0.05 | 3 | 1 | 2 | 1040 | 2 | |
| PERMO-PENN | 2 | 0.80 | 0.05 | 2 | | 2 | 1060 | 2 | |
| WOOD RIVER | | | | | | | | | |
| MANNVILLE | 30 | 0.85 | 0.10 | 23 | 11 | 12 | 1100 | 13 | |
| WORSLEY | | | | | | | | | |
| D-3 A | 27 | 0.85 | 0.07 | 21 | 18 | 3 | 950* | 3 | |

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| 11<br>AVERAGE PAY THICKNESS<br>FEET | 12<br>POROSITY<br>FRACTION | 13<br>LIQUID SATURATION<br>FRACTION | 14<br>INITIAL PRESSURE<br>PSIA | 15<br>RESERVOIR TEMPERATURE<br>°F | 16<br>COMPRESS-IBILITY FACTOR<br>FRACTION | 17<br>RAW GAS SPECIFIC GRAVITY | 18<br>AVERAGE WELL DEPTH<br>FEET | 19<br>DISCOVERY YEAR | 20<br>DATE LAST REVIEWED, DISPOSITION AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 1 |
| | | | | | | | | | 1965 | 2 |
| | | | | | | | | | 1970 | 3 |
| | | | | | | | | | 1956 | 4 |
| | | | | | | | | | | 5 |
| | | | | | | | | | | 6 |
| | | | | | | | | | 1970 WESTERN MINERALS | 7 |
| | | | | | | | | | 1961 LOCAL UTILITY | 8 |
| | | | | | | | | | 1965 WESTERN MINERALS | 9 |
| | | | | | | | | | | 10 |
| | | | | | | | | | | 11 |
| 19 | 0.06 | 0.25 | 2800 | 190 | 0.87 | 0.68 | 7040 | 1960 | 1966 A&S | 12 |
| 37 | 0.06 | 0.25 | 2800 | 195 | 0.87 | 0.70 | 7290 | 1961 | 1966 A&S | 13 |
| | | | | | | | | | | 14 |
| | | | | | | | | | | 15 |
| | | | | | | | | | 1956 | 16 |
| | | | | | | | | | 1961 | 17 |
| | | | | | | | | | 1959 | 18 |
| | | | | | | | | | 1970 | 19 |
| | | | | | | | | | | 20 |
| 41 | 0.08 | 0.10 | 3010 | 175 | 0.83 | 0.78 | 7480 | 1954 | 1969 | 21 |
| | | | | | | | | | 1969 TCPL | 22 |
| | | | | | | | | | | 23 |
| | | | | | | | | | | 24 |
| 6 | 0.08 | 0.20 | 1570 | 145 | 0.87 | 0.63 | 5140 | 1955 | 1963 | 25 |
| | | | | | | | | | 1961 A&S | 26 |
| 116 | 0.06 | 0.15 | 3790 | 220 | 0.83 | 0.81 | 9050 | 1955 | 1967 A&S - PRESSURE | 27 |
| | | | | | | | 9100 | 1955 | 1966 MAINTAINED WITH PINE | 28 |
| | | | | | | | | | CREEK & PINE NW GAS | 29 |
| | | | | | | | | | | 30 |
| | | | | | | | | | | 31 |
| 4 | 0.20 | 0.40 | 730 | 85 | 0.92 | 0.59 | 2160 | 1963 | 1970 LOCAL UTILITY | 32 |
| | | | | | | | | | 1969 | 33 |
| | | | | | | | | | | 34 |
| | | | | | | | | | | 35 |
| | | | | | | | | | 1963 TCPL | 36 |
| 19 | 0.20 | 0.30 | 1280 | 90 | 0.86 | 0.65 | 3130 | 1955 | 1965 | 37 |
| | | | | | | | | | 1966 TCPL | 38 |
| | | | | | | | | | 1969 | 39 |
| | | | | | | | | | | 40 |
| | | | | | | | | | 1968 TCPL | 41 |
| 13 | 0.17 | 0.35 | 1410 | 105 | 0.80 | 0.70 | 4110 | 1966 | 1968 TCPL | 42 |
| | | | | | | | | | 1966 | 43 |
| | | | | | | | | | 1963 | 44 |
| | | | | | | | | | | 45 |
| | | | | | | | | | | 46 |
| | | | | | | | | | 1966 | 47 |
| | | | | | | | | | 1960 NUL | 48 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 4780 | 1951 | 1969 NUL | 49 |
| | | | | | | | | | 1959 NUL | 50 |
| | | | | | | | | | | 51 |
| | | | | | | | | | 1968 | 52 |
| | | | | | | | 6460 | 1951 | 1966 NUL | 53 |
| | | | | | | | | | | 54 |
| | | | | | | | | | | 55 |
| | | | | | | | | | 1961 | 56 |
| | | | | | | | | | 1961 | 57 |
| | | | | | | | | | 1961 LOCAL UTILITY | 58 |
| | | | | | | | | | 1961 | 59 |
| | | | | | | | | | | 60 |
| | | | | | | | | | | 61 |
| | | | | | | | | | 1961 TCPL | 62 |
| | | | | | | | | | | 63 |
| | | | | | | | | | | 64 |
| | | GIP BASED ON MATERIAL BALANCE | | | | | 7430 | 1960 | 1969 WESTCOAST | 65 |

TABLE A-1 (CONTINUED) - ESTABLISHED RESERVES OF GAS IN THE PROVINCE

| *** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| POOL OR ZONE | INITIAL GAS IN PLACE BCF | POOL RECOVERY FRACTION | SURFACE LOSS FRACTION | INITIAL MARKETABLE GAS BCF | MARKETABLE GAS PRODUCED AUG. 31/70 BCF | REMAINING MARKETABLE GAS AUG. 31/70 BCF | GROSS HEATING VALUE BTU/CU.FT | REMAINING MARKETABLE GAS AT 1000 BTU BCF | AREA ACRES |
| WORSLEY (CONTINUED) | | | | | | | | | |
| D-3 B | 29 | 0.85 | 0.07 | 23 | 19 | 4 | 950* | 4 | |
| D-3 D | 56 | 0.80 | 0.10 | 40 | 30 | 10 | 950* | 10 | 1410 |
| D-3 E | 16 | 0.85 | 0.05 | 13 | 4 | 9 | 950* | 9 | 500 |
| D-3 G | 65 | 0.85 | 0.05 | 53 | 21 | 32 | 950* | 30 | 3700 |
| D-3 (OTHER) | 4 | 0.85 | 0.05 | 3 | 1 | 2 | 950* | 2 | |
| D-3 ASSOC | 1 | 0.80 | 0.05 | 1 | | 1 | 950* | 1 | |
| YEKAU LAKE | | | | | | | | | |
| VIKING | 8 | 0.80 | 0.02 | 7 | 2 | 5 | 1070 | 5 | |
| ZAMA | | | | | | | | | |
| SLAVE POINT | 74 | 0.90 | 0.15 | 58 | | 58 | 1050* | 61 | |
| SULPHUR POINT | 270 | 0.85 | 0.15 | 190 | | 190 | 1050* | 200 | |
| SULPHUR POINT ASSOC | 9 | 0.85 | 0.15 | 6 | | 6 | 1050* | 6 | |
| SULPHUR POINT SOLN | 6 | 0.70 | 0.25 | 3 | | 3 | 1100* | 3 | |
| MUSKEG SOLN | 23 | 0.70 | 0.25 | 12 | | 12 | 1100* | 13 | |
| KEG RIVER | 29 | 0.85 | 0.30 | 18 | | 18 | 1150* | 21 | |
| KEG RIVER ASSOC | 15 | 0.85 | 0.55 | 7 | | 7 | 1150* | 8 | |
| KEG RIVER SOLN | 150 | 0.65 | 0.25 | 74 | | 74 | 1200* | 89 | |
| SUB TOTAL | 92595 | | | 55383 | 10671 | 44712 | | 47259 | |
| OTHER RESERVES | | | | | | | | | |
| LESS THAN 10 BCF | 1155 | | | 691 | | 691 | | 726 | |
| CONFIDENTIAL POOLS | 634 | | | 379 | | 379 | | 398 | |
| TOTAL RESERVES | 94384 | | | 56453 | 10671 | 45782 | | 48383 | |
| WITHIN ECONOMIC REACH | 90911 | | | 54376 | 10671 | 43705 | | 46077 | |
| BEYOND ECONOMIC REACH | 3473 | | | 2077 | | 2077 | | 2306 | |

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| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE PAY THICKNESS FEET | POROSITY FRACTION | LIQUID SATURATION FRACTION | INITIAL PRESSURE PSIA | RESERVOIR TEMPERATURE °F | COMPRESS-IBILITY FACTOR FRACTION | RAW GAS SPECIFIC GRAVITY | AVERAGE WELL DEPTH FEET | DISCOVERY YEAR | DATE LAST REVIEWED, DISPOSITION AND REMARKS |
| | GIP BASED ON MATERIAL BALANCE | | | | | | 7260 | 1960 | 1966 WESTCOAST |
| [illegible] | 0.10 | 0.20 | 3090 | 180 | 0.89 | 0.73 | 7030 | 1961 | 1970 WESTCOAST |
| [illegible] | 0.11 | 0.20 | 3060 | 170 | 0.91 | 0.67 | 7630 | 1966 | 1966 WESTCOAST |
| [illegible] | 0.06 | 0.20 | 3300 | 180 | 0.91 | 0.64 | 7290 | 1959 | 1966 WESTCOAST |
| | | | | | | | | | 1966 WESTCOAST |
| | | | | | | | | | 1965 |
| | | | | | | | | | 1969 INJECTED INTO LEDUC-WOODBEND |
| | | | | | | | | | 1967 CONSIDERED BEYOND |
| | | | | | | | | | 1967 ECONOMIC REACH |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1969 |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1967 |
| | | | | | | | | | 1969 |

## APPENDIX B

## THE GROWTH TREND OF RESERVES OF GAS IN ALBERTA AND THE FUTURE RESERVES TO BE CONSIDERED

The reserves considered in this appendix in determining the trends in the growth of reserves are the initial marketable reserves without adjustment for heating value.

### Growth of Reserves

The amount of future reserves to be included in calculating the future surplus is based on the growth rate in the most recent 10-year period, as described in Board Report OGCB 69-D[1].

(1) Views of Alberta and Southern

Alberta and Southern did not present a detailed study of the trends in the growth of gas reserves in the Province nor did it submit a detailed calculation of the average growth rate over the past 10 years.

(2) Views of Consolidated

Consolidated did not present a detailed study of the trends in the growth of gas reserves in the Province. However, it estimated the average growth rate over the past 10 years to be 2.6 trillion cubic feet per year.

(3) Views of the Board

The Board estimates the initial marketable gas reserves in the Province at August 31, 1970 to be 56.5 trillion cubic feet. The 10-year growth rate has been determined from the Board's

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(1) Report and Decision on Review of Policies and Procedures for Considering Applications under The Gas Resources Preservation Act, 1956. October, 1969.

estimates at September 30, 1959, December 31, 1960 and August 31, 1970. The September 30, 1959[2] estimate of 28.0 trillion cubic feet and the December 31, 1960[3] estimate of 33.2 trillion cubic feet were used in interpolating a reserve as of August 31, 1960 of 31.8 trillion cubic feet. On the basis of the above initial reserve estimates for August 31, 1960 and August 31, 1970, the Board has established an average growth rate of 2.5 trillion cubic feet over the past 10 years. This is lower than the growth rate over the last three or four years and accordingly the Board is confident that the growth rate should continue to average at least 2.5 trillion cubic feet per year for at least four or five years into the future.

Ultimate Reserves

Neither Alberta and Southern, Consolidated nor any of the interveners submitted new evidence respecting the ultimate gas reserves of the Province. The Board in OGCB Report 70-18[4] analysed the ultimate gas reserves of the Province in considerable detail and gave careful consideration to the views expressed on this matter in the submission of the Alberta Division of the Canadian Petroleum Association at the hearing of June 18, 1969, reported in OGCB 69-D. The Board's estimate is that the ultimate

(2) Report to the Lieutenant Governor in Council with respect to the applications under The Gas Resources Preservation Act, 1956 of: Alberta and Southern Gas Co. Ltd., Saskatchewan Power Corporation, Trans-Canada Pipe Lines Limited, Westcoast Transmission Company Limited. December, 1959.

(3) Reserves of Natural Gas, Natural Gas Liquids and Crude Oil of The Province of Alberta. March, 1961.

(4) Reserves of Crude Oil, Gas, Natural Gas Liquids and Sulphur, Province of Alberta. December 31, 1969.

marketable gas reserves of the Province will be of the order of 100 trillion cubic feet.

## Future Reserves to be Considered

The Board, in report OGCB 69-D, adopted the following formula for determining the future reserves to be considered:

$$T_G = \frac{R_{POT} - R_{EST}}{10}$$

where $T_G$ = Years of growth of gas reserves

$R_{POT}$ = Potential initial marketable reserves of the Province, trillions of cubic feet; and

$R_{EST}$ = Established initial marketable reserves at the time of application of the formula, trillions of cubic feet.

(1) Views of Alberta and Southern

Alberta and Southern used 11.7 trillion cubic feet of future reserves in calculating the future surplus. No detailed calculations were submitted to substantiate this estimate.

(2) Views of Consolidated

Consolidated used 11.2 trillion cubic feet of future reserves in calculating the future surplus. This corresponds to 4.3 years of growth at an average annual growth rate of 2.6 trillion cubic feet per year.

(3) Views of the Board

The future reserves to be considered in calculating the future surplus using the initial established reserves of 56.5 trillion cubic feet estimated as of August 31, 1970, and ultimate reserves

of 100 trillion cubic feet are 11.3 trillion cubic feet. This corresponds to 4.5 years of growth at the 10-year growth rate of 2.5 trillion cubic feet per year.

## APPENDIX C

## ALBERTA GAS REQUIREMENTS AND PRESENT PERMIT COMMITMENTS

### Views of Alberta and Southern

Alberta and Southern estimated Alberta's 30-year gas requirements and outstanding permit commitments by adjusting the Board estimates contained in OGCB Report 70-A[1] to a May 1, 1970 assessment date. On this basis, the applicant forecast that the Province's 30-year gas requirements would total 16.3 trillion cubic feet. Alberta and Southern's original estimates of outstanding permit commitments were amended at the hearing to include the recent TransCanada authorization[2]. Having regard for this new permit, Alberta and Southern estimated that the remaining permit commitments of the Province would amount to 30.6 trillion cubic feet.

### Views of Consolidated

Consolidated estimated Alberta's 30-year gas requirements by adjusting its forecast of provincial requirements submitted at the recent gas requirements hearing[3] to reflect a new forecast period commencing July 15, 1970 and ending July 14, 2000. The 30-year Alberta requirements, excluding pipe line fuel and

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(1) In the Matter of an Application of Alberta and Southern Gas Co. Ltd. under The Gas Resources Preservation Act, 1956. January 1970.

(2) See OGCB Report 70-B - In the Matter of an Application of TransCanada Pipe Lines Limited under The Gas Resources Preservation Act, 1956. 1970.

(3) Held before the Board in July 1970. The Board Report in respect of the hearing will be published in February, 1971.

reprocessing plant shrinkage and losses, were estimated as 13.8 trillion cubic feet. The applicant also allowed 2.0 trillion cubic feet for line loss and shrinkage resulting in a total requirement of 15.8 trillion cubic feet. The applicant suggested that the permit-related requirements of 2.0 trillion cubic feet could be met from fields named in permits without reducing the authorized volumes. Outstanding permit commitments were estimated by Consolidated to total 30.8 trillion cubic feet as of July 15, 1970.

Views of the Board

(1) Alberta Requirements

In July, 1970 the Board held a hearing to determine Alberta's gas requirements for the 30-year period January 1, 1970 to December 31, 1999. The Board Report respecting this hearing is expected to be issued in February, 1971. In considering the applications of Alberta and Southern and Consolidated the Board has adopted the estimated requirements as determined in the Requirements Report but has adjusted them to the period September 1, 1970 to August 31, 2000 to coincide with the reserve estimates in this report. Table C-1 summarizes the Board forecast of Alberta gas requirements for the 30-year period commencing September 1, 1970. As shown, the Board estimates that Alberta's gas requirements will total 16,038 billion cubic feet over the September 1, 1970 to August 31, 2000 period of which 2,089 billion cubic feet represent permit-related requirements.

(2) Permit Commitments

The present permit commitments of the Province are listed in

Table C-2. The remaining authorized withdrawals associated with these permits were determined as of August 31, 1970 and are estimated to toal 29.8 trillion cubic feet, equivalent to 30.2 trillion cubic feet of 1,000 Btu gas, for the period commencing September 1, 1970.

## TABLE C-1

**Summary of Board Forecast of Alberta Gas Requirements for Period September 1, 1970 to August 31, 2000**
(Billions of Cubic Feet of 1,000 Btu Gas)

| | Board |
|---|---|
| Residential | |
| 1970 Annual[1] | 59.4 |
| 1999 Annual | 110.2 |
| 30-year Total | 2,578 |
| Commercial | |
| 1970 Annual | 52.5 |
| 1999 Annual | 115.3 |
| 30-year Total | 2,500 |
| Industrial & Contingent[2] | |
| 1970 Annual | 131.1 |
| 1999 Annual | 428.9 |
| 30-year Total | 8,871 |
| Permit-Related | |
| 1970 Annual | 83.0 |
| 1999 Annual | 2.3 |
| 30-year Total | 2,089 |
| Total | |
| 1970 Annual | 326.0 |
| 1999 Annual | 656.7 |
| 30-year Total | 16,038 |
| Equivalent Average Annual Growth Rate to Achieve Terminal Year (%) | 2.4 |
| Equivalent Average Annual Growth Rate to Achieve 30-year Total (%) | 3.2 |

(1) Throughout, the identified year refers to the period September 1 of the indicated year to August 31 of the immediately succeeding year.

(2) Includes the operating requirements of the gas utility companies.

TABLE C-2

PERMIT COMMITMENTS

(ALL VOLUMES AT 14.65 PSIA AND 60°F)

| PERMIT NUMBER | PERMITTEE AND FIELDS UNDER PERMIT | TERMINAL DATE OF PERMIT | PERMITTED WITHDRAWALS MAXIMUM DAY MMCF | PERMITTED WITHDRAWALS MAXIMUM ANNUAL BCF | PERMITTED WITHDRAWALS TOTAL BCF | WITHDRAWN TO AUG. 31, 1970 BCF | REMAINING AUTHORIZED WITHDRAWAL BCF |
|---|---|---|---|---|---|---|---|
| GAS 69-5 | ALBERTA AND SOUTHERN GAS CO. LTD. | 31/10/93 | 1,270.0 | 416.0 | 10,000.0 | 1,796.8 | 8,203.2 |
| | BELLOY, BERLAND RIVER, BIGORAY, BIGSTONE, BRAZEAU RIVER, CAROLINE, CARSON CREEK, CARSON CREEK NORTH, CROSSFIELD (RUNDLE A POOL), EAGLESHAM, FERRIER (VIKING A AND CARDIUM B POOLS), FOX CREEK, GOLD CREEK, HARMATTAN-ELKTON (D-3A POOL), HOMEGLEN-RIMBEY, HUNTER VALLEY, JUDY CREEK, KAYBOB, KAYBOB SOUTH (VIKING A, CADOMIN A, CADOMIN B, CADOMIN C, CADOMIN D, TRIASSIC A AND BEAVERHILL LAKE A POOLS), MARLBORO, MINNEHIK-BUCK LAKE, OPEN CREEK, PEMBINA (LOBSTICK GLAUCONITIC A, LOBSTICK GLAUCONITIC C, LOBSTICK GLAUCONITIC D, LOBSTICK OSTRACOD A, LOBSTICK OSTRACOD B AND PEKISKO B POOLS), PINE CREEK, PINE NORTH-WEST, SIMONETTE, STURGEON LAKE SOUTH, SUNDRE, SWAN HILLS, SWAN HILLS SOUTH, SLYVAN LAKE, TANGENT, VIRGINIA HILLS, WASKAHIGAN, WATERTON, WESTEROSE SOUTH, WESTWARD HO, WILDCAT HILLS, WILLESDEN GREEN, WILSON CREEK AND WINDFALL. | | | | | | |

TABLE C-2 (CONTINUED)

PERMIT COMMITMENTS

(ALL VOLUMES AT 14.65 PSI AND $60^{\circ}F$)

| PERMIT NUMBER | PERMITTEE AND FIELDS UNDER PERMIT | TERMINAL DATE OF PERMIT | PERMITTED WITHDRAWALS MAXIMUM DAY MMCF | PERMITTED WITHDRAWALS MAXIMUM ANNUAL BCF | PERMITTED WITHDRAWALS TOTAL BCF | WITHDRAWN TO AUG. 31, 1970 BCF | REMAINING AUTHORIZED WITHDRAWAL BCF |
|---|---|---|---|---|---|---|---|
| CD 63-1 | CANADIAN DELHI OIL LTD. - MEDICINE HAT | 30/4/88 | 4.3 | 1.57 | 32.3 | 5.0 | 27.3 |
| CM 54-1 AND CM 61-2 | CANADIAN-MONTANA PIPELINE COMPANY<br>ADEN, BLACK BUTTE, COMREY, KNAPPEN, LAIT, MANYBERRIES, PAKOWKI LAKE, PENDANT D'OREILLE & SMITH COULEE. | 15/3/86 | 100.0 | 20.0 | 514.0 (1) | 270.8 | 243.2 |
| CP 69-1 | CANADIAN PACIFIC OIL AND GAS LIMITED - MEDICINE HAT | 30/4/88 | 0.1 | 0.0365 | 0.750 | 0.158 | 0.592 |
| CNG 69-1 | CONSOLIDATED NATURAL GAS LIMITED<br>KAYBOB SOUTH (BEAVERHILL LAKE A POOL), RICINUS, RICINUS WEST AND STRACHAN. | 31/12/95 | 240.0 | 80.0 | 1,535.0 | - | 1,535.0 |
| DG 61-1 | DELTA GAS & TRANSMISSION LTD. | | | | | | |
| BS 61-1 | BAILEY SELBURN OIL AND GAS LTD. | | | | | | |
| CS 61-1 | THE CALIFORNIA STANDARD COMPANY | | | | | | |
| COG 61-1 | CHARTER OIL AND GAS LTD. — MEDICINE HAT | 30/6/86 | 9.5 | 3.5 | 71.0 | - | 71.0 |
| SEL 61-1 | SELBAY EXPLORATION LTD. | | | | | | |
| JMW 61-1 | J. MERRIL WRIGHT, JR. | | | | | | |
| CEL 61-1 | CROWFOOT EXPLORATION LTD. | | | | | | |
| CMM 61-1 | IMPERIAL OIL DEVELOPMENTS LIMITED | | | | | | |
| MOG 61-1 | MIC MAC OIL (1963) LTD. — MEDICINE HAT | 30/6/86 | 8.512 | 3.1068 | 62.0 | 12.8 | 49.2 |
| ROC 61-1 | ATLANTIC RICHFIELD COMPANY | | | | | | |

(1) TOTAL INITIAL MARKETABLE GAS IN THE FIELDS SHOWN

TABLE C-2 (CONTINUED)

PERMIT COMMITMENTS

(ALL VOLUMES AT 14.65 PSI AND 60°F)

| PERMIT NUMBER | PERMITTEE AND FIELDS UNDER PERMIT | TERMINAL DATE OF PERMIT | PERMITTED WITHDRAWALS MAXIMUM DAY MMCF | MAXIMUM ANNUAL BCF | TOTAL BCF | WITHDRAWN TO AUG. 31, 1970 BCF | REMAINING AUTHORIZED WITHDRAWAL BCF |
|---|---|---|---|---|---|---|---|
| ROC 65-2 | ATLANTIC RICHFIELD COMPANY<br>- MEDICINE HAT | 31/5/70 | 0.26 | 0.088 | 2.0 | 0.2 | [illegible] |
| HB 63-1 | HUDSON'S BAY OIL AND GAS COMPANY LIMITED<br>- MEDICINE HAT | 30/4/88 | [illegible] | [illegible] | 7.65 | [illegible] | [illegible] |
| SPC 57-1 | MANY ISLAND PIPE LINES LTD.<br>- MEDICINE HAT | [illegible] | [illegible] | 44.53 | [illegible] | [illegible] | [illegible] |
| MO 66-1 | MURPHY OIL COMPANY LTD.<br>- RED COULEE | 31/5/86 | 0.6 | - | 0.5 | - | [illegible] |
| NSU 64-1 | THE BRITISH AMERICAN OIL COMPANY, LIMITED, ROYALITE OIL COMPANY, LIMITED, SUN OIL COMPANY AND UNITED CANSO OIL & GAS LTD.<br>- ANTELOPE AND ESTHER | 30/9/89 | [illegible] | [illegible] | [illegible] | [illegible] | 26.8 |
| MOC 70-1 | MOBIL OIL CANADA, LTD.<br>- MOBIL OYEN 10-4-30-2 | 31/1/90 | 2.0 | 0.73 | 4.69 | 0.20 | 4.49 |
| | PEACE RIVER TRANSMISSION COMPANY LIMITED<br>- [illegible] | [illegible] | 6.0 | 0.6 | 13.0 | [illegible] | 20.2 |
| | PEACE RIVER TRANSMISSION COMPANY LIMITED<br>- POUCE COUPE SOUTH | 1/10/86 | 6.9 | 0.98 | 19.7 | | |
| B 68-1 | PATRICK T. [illegible]<br>- VANALTA NO. 4 | 31/5/73 | [illegible] PER MONTH | [illegible] | - | [illegible] | |
| TC 70-10 | TRANS-CANADA PIPE LINES LIMITED | 31/10/94 | [illegible] | [illegible] | [illegible] | [illegible] | 18,257.9 |

ALDERSON, ALIX, [illegible], ARMADA, ATLEE-[illegible],

BANTRY, BASHAW, [illegible], BELLY, BERRY, BIG BEND,

[illegible], [illegible], [illegible], [illegible], [illegible],

TABLE C-2 (CONTINUED)

PERMIT COMMITMENT

(ALL VOLUMES AT 14.65 PSI AND $60^{O}F$)

| PERMIT NUMBER | PERMITTEE AND FIELDS UNDER PERMIT | TERMINAL DATE OF PERMIT | PERMITTED WITHDRAWALS MAXIMUM DAY MMCF | PERMITTED WITHDRAWALS MAXIMUM ANNUAL BCF | PERMITTED WITHDRAWALS TOTAL BCF | WITHDRAWN TO AUG. 31, 1970 BCF | REMAINING AUTHORIZED WITHDRAWAL BCF |
|---|---|---|---|---|---|---|---|
| | Boyle, Brazeau River, Bruce, Burnt Timber, Caroline (Viking A, Viking E, and Basal Mannville A Pools), Carstairs, Cassils, Castor, Cessford, Chestermere, Chigwell, Clive, Connorsville, Countess, Craigend, Crossfield, Crossfield East, Drumheller, Edson, Elnora, Enchant, Equity, Erskine, Fenn West, Ferrier, Figure Lake, Flat, Garrington (Mannville A and Leduc A Pools), Ghost Pine, Gilby, Goodwin, Greencourt, Hackett, Halliday, Harmattan East, Harmattan-Elkton (Rundle A Pool), Homeglen-Rimbey, Hughenden, Hunter Valley, Hussar, Innisfail, Jarrow, Jenner, Johnson, Jumping Pound West, Killam, Kirkwall, Kitsim, Lathom, Leckie, Little Bow, Lone Pine Creek, Long Coulee, Lookout Butte, Malmo, Marten Hills, McMullen, Medicine Hat, Medicine River, Mikwan, Mitsue, Moose, Nevis, Newell, New Norway, Nipisi, Obed, Olds, Oyen, Parflesh, Pelican, Pincher Creek, Plain, Prevo, Princess, Provost, Quirk Creek, Rainier, Ranfurly, Retlaw, | | | | | | |

TABLE C-2 (CONTINUED)

PERMIT COMMITMENTS

(ALL VOLUMES AT 14.65 PSI AND 60°F)

| PERMIT NUMBER | PERMITTEE AND FIELDS UNDER PERMIT | TERMINAL DATE OF PERMIT | PERMITTED WITHDRAWALS MAXIMUM DAY MMCF | PERMITTED WITHDRAWALS MAXIMUM ANNUAL BCF | PERMITTED WITHDRAWALS TOTAL BCF | WITHDRAWN TO AUG. 31, 1970 BCF | REMAINING AUTHORIZED WITHDRAWAL BCF |
|---|---|---|---|---|---|---|---|
| | RICH, RICHDALE, RICINUS, RICINUS WEST, ROWLEY, SCANDIA, SEDALIA, SEDGEWICK, SEIU LAKE, SIBBALD, STANDARD, STANMORE, STRACHAN, SUNDRE (BASAL MANNVILLE A AND BASAL MANNVILLE B POOLS), SUNNYNOOK, SUPERBA, SWALWELL, SYLVAN LAKE, THREE HILLS CREEK, TROCHU, TURIN, TWINING NORTH, VALTA, VERGER, VULCAN, WARWICK, WAYNE-ROSEDALE, WESTEROSE, WESTEROSE SOUTH, WHISKEY, WHITECOURT, WILDHORSE CREEK, WILDUNN CREEK, WILLESDEN GREEN, WIMBORNE, WINNIFRED, WINTERING HILLS AND WOOD RIVER. | | | | | | |
| WC 52-1 | WESTCOAST TRANSMISSION COMPANY LIMITED AND WESTCOAST TRANSMISSION COMPANY (ALBERTA) LTD. | 31/12/79 | 125.0 | 35.0 | 388.0 | 256.9 | 131.1 |
| | BRAEBURN, GORDONDALE, POUCE COUPE AND POUCE COUPE SOUTH COUPE SOUTH. | | | | | | |
| WC 61-4 | WESTCOAST TRANSMISSION COMPANY LIMITED AND WESTCOAST TRANSMISSION COMPANY (ALBERTA) LTD. | 31/12/79 | VOLUMES NOT TO EXCEED THOSE AUTHORIZED IN PERMIT NO. WC 52-1 | | | | |
| | BOUNDARY LAKE SOUTH | | | | | | |

TABLE C-2 (CONTINUED)

PERMIT COMMITMENTS

(ALL VOLUMES AT 14.65 PSI AND $60^{O}F$)

| PERMIT NUMBER | PERMITTEE AND FIELDS UNDER PERMIT | TERMINAL DATE OF PERMIT | PERMITTED WITHDRAWALS MAXIMUM DAY MMCF | PERMITTED WITHDRAWALS MAXIMUM ANNUAL BCF | PERMITTED WITHDRAWALS TOTAL BCF | WITHDRAWN TO AUG. 31, 1970 BCF | REMAINING AUTHORIZED WITHDRAWAL BCF |
|---|---|---|---|---|---|---|---|
| WC 59-3 | WESTCOAST TRANSMISSION COMPANY LIMITED<br>CROSSFIELD (CALGARY BASAL QUARTZ, CALGARY RUNDLE AND CALGARY WABAMUN POOLS), IRRICANA, AND SAVANNA CREEK. | 2/12/81 | 162.2 | 53.1 | 1,081.2 | 400.7 | 680.5 |
| WC 62-5 | WESTCOAST TRANSMISSION COMPANY LIMITED AND WESTCOAST TRANSMISSION COMPANY (ALBERTA) LTD.<br>WORSLEY | 31/12/81 | 53.3 | 16.0 | 220.0 | 91.2 | 128.8 |
| | | | 5,254.675 | 1,691.8183 | 36,961.190 | 7,206.448 | 29,754.802 |

## APPENDIX D

## THE MEETING OF ALBERTA'S REQUIREMENTS FOR GAS AND THE PRESENT PERMIT COMMITMENTS, AND THE RESULTING SURPLUS

### Views of Alberta and Southern

Alberta and Southern did not present detailed evidence to show how Alberta's 30-year requirements for gas might be met but did estimate the surplus of gas in the Province by updating the Board's estimate of contractable reserves and total Alberta requirements as shown in OGCB Report 70-A[1]. Alberta and Southern submitted a table, included here as Table D-5, whereby it showed that at May 1, 1970, the contractable reserves exceeded the contractable requirements by some 1.7 trillion cubic feet and that a future surplus of some 5.1 trillion cubic feet existed.

### Views of Consolidated

Consolidated submitted the surplus calculation presented as Table D-6 showing that a contractable surplus of some 3.0 trillion cubic feet and a future surplus of some 5.5 trillion cubic feet existed at July 15, 1970. Consolidated did not present detailed evidence to show Alberta's 30-year requirements but used those which it had submitted at the 1970 Requirements Hearing. It modified slightly the 1969 year-end reserves as estimated by the

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(1) In the Matter of an Application of Alberta and Southern Gas Co. Ltd. Under the Gas Resources Preservation Act, 1956. January 1970.

Board in OGCB Report 70-18[2] and adjusted for production to estimate the remaining reserves of marketable gas at July 15, 1970.

Views of the Board

(1) The Meeting of Alberta's Long Term Requirements (September 1, 1970 to August 31, 2000)

As shown in Appendix C, the 30-year gas requirements for delivery to markets within the Province have been estimated by the Board to be some 16.0 trillion cubic feet. Of this total, some 2.0 trillion cubic feet are required for the fuel and shrinkage associated with permits for the removal of gas from the Province; hence the estimated Alberta non-permit related requirements are some 14.0 trillion cubic feet. The non-permit peak day requirement in the 30th year is estimated to be some 3.5 billion cubic feet. The contractable Alberta requirements are taken as the permit related Alberta requirements plus the greater of

(a) the remaining reserves of those fields connected to and supplying Alberta requirements, or

(b) 30 times the non-permit related Alberta requirements of the first year of the period under consideration.

The first quantity currently consists of the reserves of pools shown in Table D-1 which total 6.4 trillion cubic feet and

(2) Reserves of Crude Oil, Gas, Natural Gas Liquids and Sulphur Province of Alberta. December 31, 1969.

the second quantity is currently 7.3 trillion cubic feet. The contractable Alberta requirements are therefore 9.3 trillion cubic feet (7.3 + 2.0 = 9.3).

Table D-1 shows also the Board's interpretation of the reserve-delivery ratio of each of the fields and the average reserve-delivery ratio of the group of fields supplying Alberta requirements. The reserves are classified in the table between solution gas reserves and non-solution gas reserves. The reserve-delivery ratio is the initial gas in place adjusted for surface losses divided by the initial fully developed marketable gas deliverability. The ratios have been updated to take account of changes in reserves of pools, additional deliverability data and new discoveries.

The Board has updated its deliverability schedules on the basis of the general Alberta requirements which are exclusive of Trunk Line and reprocessing plant fuel and shrinkage, and find that some 6.5 trillion cubic feet of the 7.3 trillion cubic feet needed to supply the contractable Alberta requirements will be produced during the 30-year period. The remaining unproduced portion will be capable of sustaining a peak day delivery of some 300 million cubic feet in the 30th year. Therefore, total deliveries of about 7.5 trillion cubic feet (14.0 - 6.5 = 7.5) and a 30th-year peak day delivery of about 3,200 million cubic feet (3,500 - 300 = 3,200)will be required from other sources.

The actual quantities of gas necessary to provide these deliveries may be calculated using the formula method presented

in Appendix E of OGCB Report 64-11[3]. With respect to the factors to be used in the formula, the Board believes that since this gas must come in part from established gas reserves not now connected to local utilities nor authorized for removal from the Province and in part from gas reserves not yet developed, the factors should reflect the delivery characteristics of both of these sources of gas.

The Board has reviewed the average reserve-delivery ratio to take account of changes which have occurred since the issuance of OGCB Report 70-B[4]. It finds, as is illustrated in Table D-2, that the average reserve-delivery ratio is 1.9 rather than 2.0 as previously used. The Board has also reviewed the average reservoir recovery factor of the gas in place adjusted for surface losses and finds the factor of 0.74 as used in OGCB Report 70-B to be appropriate.

The following is a detailed calculation of the gas reserves in billions of cubic feet necessary to meet Alberta's 30-year general requirements:

| | | |
|---|---|---|
| From now connected sources and additional sources needed to supply the contractable requirements for delivery during the period | 6,500 | |
| From additional sources for delivery during the period | 7,500 | |
| Total Alberta Requirements for delivery | | 14,000 |

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(3) Report on the Application of Trans-Canada Pipe Lines Limited and Alberta and Southern Gas Co. Ltd. under The Gas Resources Preservation Act, 1956. November 1964.

(4) In the Matter of an Application of Trans-Canada Pipe Lines Limited under The Gas Resources Preservation Act, 1956. July 1970.

| | | |
|---|---|---|
| From now connected sources and additional sources needed to supply the contractable requirements, to protect the 30th-year peak (1) | 800 | |
| From additional sources to protect the 30th-year peak (2) | 3,900 | |
| Total Alberta Requirements for peak day protection | | 4,700 |
| Total Alberta Requirements | | 18,700 |

(1) i.e. 7,300 - 6,500 = 800

(2) Determined as $R_p = 1.3\ FP_n - (1-K)\ (1.3\ FP_N + A_1 S)$

$$= 1.3\ (1.9)\ (3,200) - (1.0 - 0.74)\ \left[1.3\ (1.9)\ (3,200) + 7,500\right]$$

$$= 7,904 - 4,005 = 3,899;$$ say 3,900 billion cubic feet

(2) The Remaining Permit Commitments

The permit commitments remaining at August 31, 1970 are shown in Appendix C to be some 29.8 trillion cubic feet before adjustments for heating value, for deficiencies in reserves in certain permits and for provision for Trunk Line and reprocessing plant fuel and shrinkage.

The fields included in each of the permits are shown in Table D-3. The table shows the Board's current estimate of the remaining reserves of marketable gas and the ratio of initial marketable gas in place to delivery capacity for each field. The table reflects changes in the remaining marketable reserves which have occurred since the preparation of OGCB Report 70-B and also incorporates revisions to reserve-delivery ratios resulting from additional data respecting pool deliverability. In the

case of Trans-Canada, the Stanmore Field is shown to reflect the recent permit amendment; however, the reserves for the field are not included.

In Tables D-1 and D-3 the remaining reserves of fields which are divided between permittees or between permittees and Provincial requirements are shared on the basis of the Board's knowledge of the gas purchase contracts involved and in accordance with the policy set out in Board Report OGCB 69-D(5). In areas where a considerable portion of the reserves are not yet under contract and the competition for reserves is high, only those reserves actually under contract have been included in the table. In areas where most of the reserves are under contract or where competition is not as great the total reserves have been included.

The results of the Board's analysis with respect to the meeting of the remaining permit commitments and the related Trunk Line and reprocessing plant fuel and shrinkage are shown in Table D-2. Column 1 shows the remaining permit commitment authorized in each of the permits. These figures were obtained from Appendix C and have been converted to the basis of 1,000 Btu per cubic foot using the expected average heating value of the gas as it leaves the Province. Column 2 shows the Board's current estimate of the total remaining marketable reserves (from Table D-3) of the fields included in each permit. Column 3 shows the mar-

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(5) Report and Decision on Review of Policies and Procedures for Considering Applications Under The Gas Resources Preservation Act, 1956. October 1969.

ketable gas required to meet the peak day commitment for Permit No. WC 59-3. Columns 4, 5 and 6 show the fuel and shrinkage requirements for each permit. Column 4 shows the fuel and shrinkage related to each permit, column 5 shows the amount of gas which is available to meet these requirements from fields not included in the permits, and column 6 shows the net requirements from fields named in the permits. Column 7 is column 2 less columns 3 and 6 and presents the Board's estimate of reserves available to meet the permit commitments. Column 8 shows the remaining surplus in permit fields after the permit commitments have been met.

In the case of permittees other than Alberta and Southern the Board has assumed that the fuel and shrinkage would come from fields currently in the permits. The result is that certain permittees, in particular TransCanada, do not appear to have sufficient reserves available to meet both the remaining permit commitments and the associated Trunk Line and reprocessing plant fuel and shrinkage. In the case of TransCanada, a recent permit amendment has added Stanmore to the life of fields from which gas may be removed. This field will be used to supply gas for Trunk Line and reprocessing plant fuel and shrinkage requirements and thus will reduce slightly thedeficiency shown in Table D-4 for the TransCanada permit.

Table D-4 shows that total marketable gas reserves of some 32.0 trillion cubic feet are available in permit fields to meet the commitments of all subsisting permits of some 30.2 trillion

cubic feet. The 32.0 trillion cubic feet is after providing some 0.1 trillion cubic feet for cushion gas and some 2.0 trillion cubic feet for related fuel and shrinkage. The table shows that in total a surplus of 1.8 trillion cubic feet exists in the fields named in the permits. As mentioned earlier, certain individual permits show a deficiency.

(3) The Gas Surplus to Alberta's Requirements and the Permit Commitments

The surplus calculation using the method adopted by the Board and discussed in detail in OGCB 69-D is illustrated in Table D-7.

The table shows that the Board's estimate of contractable reserves, the reserves within economic reach (46.1 trillion cubic feet) less the deferred reserves (4.0 trillion cubic feet) totals some 42.1 trillion cubic feet. The deferred reserves are listed in Table D-8 and the Board expects all these reserves to become marketable within 30 years.

In keeping with certain procedural changes recently announced by the Board and discussed in Section VI, the Board has segregated the permit-related fuel and reprocessing shrinkage requirements from all other Alberta requirements in calculating the contractable surplus. Table D-7 shows the non-permit related contractable Alberta requirements to be 7.3 trillion cubic feet, and the permit-related requirements to be 2.0 trillion cubic feet, giving a total Alberta contractable requirement of 9.3 trillion cubic feet. The permit requirements are some 30.3 trillion cubic feet. The comparison of the contractable reserves and the contractable requirements results in a contractable surplus of 2.5 trillion cubic feet.

The table shows that the remaining Alberta requirements total some 11.4 trillion cubic feet. These are made up of some 7.5 trillion cubic feet which the Board believes will have to be delivered during the 30-year period and some 3.9 trillion cubic feet which the Board estimates will be necessary to provide for the 30th-year peak day.

The remaining and future reserves available to meet these Alberta requirements are shown to total some 17.1 trillion cubic feet. These are made up of 4.0 trillion cubic feet of deferred gas which the Board believes will be available within the 30-year period, some 1.7 trillion cubic feet of reserves now considered beyond economic reach but which the Board believes will be within economic reach within 30 years, some 0.1 trillion cubic feet allocated to protect peak day requirements in Permit No. WC 59-3 but available within 30 years, and 11.3 trillion cubic feet of future reserves. The Board studies indicate that all 17.1 trillion cubic feet of remaining and future reserves will be available to meet deliveries or to meet the 30th-year peak day requirement.

Table D-7 shows that the total remaining reserves exceed the total remaining requirements by 5.7 trillion cubic feet.

TABLE D-1

RESERVES AND RESERVE-DELIVERY RATIOS OF FIELDS
SUPPLYING ALBERTA'S REQUIREMENTS FOR GAS

(All Volumes at 1000 Btu Per Cubic Foot)

| Field | Marketable Gas at Aug. 31, 1970 Bcf | Reserve-Delivery Ratio[1] Bcf/MMcfd |
|---|---|---|
| Non-Solution Gas | | |
| Acheson | 17 | 1.2 |
| Acheson East | 2 | 1.0 |
| Alderson | 15 | 6.9 |
| Alexander | 8 | 1.5 |
| Ashmont | 7 | 0.7 |
| Athabasca | 6 | 2.5 |
| Athabasca East | 15 | 1.1 |
| Atim | - | 0.1 |
| Bantry | 27 | 16.1 |
| Beaver Crossing | 1 | 0.4 |
| Beaverhill Lake - Fort Saskatchewan | 359 | 0.7 |
| Bittern Lake | 85 | 1.8 |
| Bonnie Glen | 9 | 0.7 |
| Bonnyville | 1 | 0.3 |
| Bow Island | 30 | 0.7 |
| Brooks | 3 | 20.0 |
| Calais | 15 | 1.7 |
| Calling Lake | 35 | 1.5 |
| Campbell-Namao | 16 | 3.8 |
| Carbon | 93 | 0.6 |
| Castor | 12 | 0.6 |
| Charlotte Lake | 1 | 0.3 |
| Cold Lake | 11 | 0.7 |
| Craig Lake | 1 | 0.4 |
| Dowling Lake | 1 | 0.5 |
| Duvernay | 1 | 0.7 |
| Edwand | 3 | 0.2 |
| Elk Point | 1 | 1.0 |

(1) The initial gas in place adjusted for surface losses divided by the initial fully developed marketable gas deliverability.

TABLE D-1 (CONTINUED)

| FIELD | MARKETABLE GAS AT AUG. 31, 1970 BCF | RESERVE-DELIVERY RATIO BCF/MMCFD |
|---|---|---|
| ELLERSLIE | 1 | 0.1 |
| ETHEL LAKE | 1 | 0.4 |
| ETZIKOM | 12 | 1.5 |
| EXCELSIOR | 37 | 1.4 |
| FAIRYDELL-BON ACCORD | 71 | 0.4 |
| FENN-BIG VALLEY | 1 | 2.2 |
| FLAT | 16 | 1.4 |
| FOREMOST | 17 | 1.8 |
| FORESTBURG | 3 | 0.6 |
| FORT KENT | 2 | 0.1 |
| GLEN PARK | 5 | 0.8 |
| HAIRY HILL | 17 | 0.8 |
| HAMELIN CREEK | 33 | 1.5 |
| HANNA | 11 | 3.1 |
| HEART RIVER | 2 | 0.1 |
| HERCULES | 21 | 1.7 |
| HOLMBERG | 12 | 1.2 |
| JOFFRE | 32 | 7.4 |
| JUMPING POUND | 339 | 2.8 |
| JUMPING POUND WEST | 853 | 6.9 |
| KILLAM NORTH | 18 | 1.6 |
| KNELLER | 7 | 1.0 |
| KNOPCIK | 11 | 3.5 |
| LAC LA BICHE | 7 | 1.3 |
| LEAHURST | 16 | 0.5 |
| LEGAL | 2 | 0.6 |
| LINDBERGH | 8 | 1.4 |
| LLOYDMINSTER | 2 | 0.5 |
| MEDICINE HAT | 401 | 4.9 |
| MELLOWDALE | 1 | 0.3 |
| MORINVILLE | 54 | 2.4 |
| MURIEL LAKE | 4 | 0.7 |
| NORMANDVILLE | 38 | 2.6 |
| OBERLIN | - | 0.6 |

TABLE D-1 (CONTINUED)

| FIELD | MARKETABLE GAS AT AUG. 31, 1970 BCF | RESERVE-DELIVERY RATIO BCF/MMCFD |
|---|---|---|
| OKOTOKS | 123 | 4.5 |
| OWLSEYE | 2 | 0.8 |
| PADDLE RIVER | 119 | 1.2 |
| PEMBINA | 93 | 3.4 |
| PROVOST | 8 | 1.7 |
| REDLAND | 30 | 0.9 |
| REDWATER | 20 | 1.3 |
| RYCROFT | 4 | 0.5 |
| SADDLE HILLS | 52 | 5.6 |
| ST. ALBERT-BIG LAKE | 43 | 1.3 |
| ST. PAUL | - | 0.8 |
| SARCEE | 91 | 1.3 |
| SEXSMITH | 4 | 0.7 |
| STETTLER | 5 | 2.8 |
| STERLING | 12 | 1.8 |
| STRATHMORE | 14 | 2.5 |
| STROME | 7 | 1.7 |
| STURGEON LAKE SOUTH | 2 | 0.7 |
| THORHILD | 11 | 1.8 |
| TURNER VALLEY | 188 | 14.2 |
| TWEEDIE | 61 | 0.7 |
| VIKING KINSELLA | 389 | 3.1 |
| WAINWRIGHT | 16 | 0.7 |
| WATTS | 3 | 1.7 |
| WAYNE-ROSEDALE | 46 | 1.0 |
| WESTLOCK | 174 | 1.2 |
| WHITELAW | 45 | 4.5 |
| WILDMERE | 16 | 1.0 |
| WILLINGDON | 12 | 0.7 |
| WINNIFRED | 6 | 1.9 |
| WIZARD LAKE | 6 | 1.4 |
| WOKING | 11 | 1.0 |
| TOTAL | 4,443 | |
| WEIGHTED AVERAGE | | 1.8 |

TABLE D-1 (CONTINUED)

| FIELD | MARKETABLE GAS AT AUG. 31, 1970 BCF | RESERVE-DELIVERY RATIO BCF/MMCFD |
|---|---|---|
| SOLUTION GAS | | |
| ACHESON | 19 | 16.3 |
| ACHESON EAST | 2 | 5.6 |
| BONNIE GLEN | 257 | 22.5 |
| FENN-BIG VALLEY | 8 | 20.0 |
| GLEN PARK | 9 | 24.3 |
| JUDY CREEK | 188 | 28.0 |
| LEDUC-WOODBEND | 25 | 3.8 |
| PEMBINA | 805 | 39.5 |
| REDWATER | 41 | 26.2 |
| SAMSON | 8 | 1.2 |
| SIMONETTE | 25 | 25.6 |
| STETTLER | 2 | 22.9 |
| STURGEON LAKE SOUTH | 11 | 41.6 |
| SWAN HILLS | 241 | 39.8 |
| SWAN HILLS SOUTH | 130 | 26.9 |
| VIRGINIA HILLS | 36 | 32.5 |
| WIZARD LAKE | 105 | 22.5 |
| TOTAL | 1,912 | |
| WEIGHTED AVERAGE | | 22.3 |
| TOTAL RESERVES CONNECTED AND SUPPLYING REQUIREMENTS | 6,355 | |
| WEIGHTED AVERAGE RESERVE-DELIVERY RATIO | | 2.8 |

TABLE D-2

SUMMARY OF RESERVES AND

AVERAGE RESERVE-DELIVERY RATIO FOR ALL

RESERVES IN THE PROVINCE

(ALL VOLUMES AT 1000 BTU PER CUBIC FOOT)

| FIELD | MARKETABLE RESERVES AT AUG. 31, 1970 BCF | RESERVE-DELIVERY[1] RATIO BCF/MMCFD |
|---|---|---|
| RESERVES NOW SUPPLYING ALBERTA'S REQUIREMENTS (SEE TABLE D-1) | 6,355 | 2.8 |
| FIELDS INCLUDED IN PERMITS (SEE TABLE D-3) | 33,853 | 1.8 |
| FIELDS APPLIED FOR BY ALBERTA AND SOUTHERN GAS CO. LTD. (SEE TABLE E-1) | 114 | 3.3 |
| FIELDS APPLIED FOR BY CONSOLIDATED NATURAL GAS LIMITED (SEE TABLE E-1) | 69 | 1.4 |
| REMAINING ESTABLISHED RESERVES[2] | 7,992 | 1.9 |
| TOTAL RECOVERABLE RESERVES IN THE PROVINCE | 48,383 | |
| WEIGHTED AVERAGE RESERVE-DELIVERY RATIO | | 1.9 |

(1) THE INITIAL GAS IN PLACE ADJUSTED FOR SURFACE LOSSES DIVIDED BY THE INITIAL FULLY DEVELOPED MARKETABLE GAS DELIVERABILITY.

(2) INCLUDES DEFERRED RESERVES AND RESERVES NOW CONSIDERED BEYOND ECONOMIC REACH.

TABLE D-3

MARKETABLE RESERVES AVAILABLE AND RESERVE-DELIVERY RATIOS OF THE FIELDS INCLUDED IN PERMITS

(All Volumes at 1000 Btu Per Cubic Foot)

| FIELD | MARKETABLE GAS AT AUG. 31, 1970 BCF | RESERVE-DELIVERY RATIO[1] BCF/MMCFD |
|---|---|---|
| ALBERTA AND SOUTHERN GAS CO. LTD. (Permit No. AS 69-5) | | |
| Belloy | 48 | 1.0 |
| Berland River | 297 | 1.4 |
| Bigoray | 37 | 1.4 |
| Bigstone | 307 | 2.2 |
| Brazeau River | 287 | 2.5 |
| Caroline | 48 | 3.5 |
| Carson Creek | 245 | 0.5 |
| Carson Creek North | 170 | 8.8 |
| Crossfield | 817 | 1.2 |
| Eaglesham | 65 | 7.7 |
| Ferrier | 12 | 6.5 |
| Fox Creek | 121 | 1.3 |
| Gold Creek | 393 | 3.4 |
| Harmattan-Elkton | 92 | 2.8 |
| Homeglen-Rimbey | 134 | 0.6 |
| Hunter Valley | 30 | 3.0 |
| Judy Creek, Swan Hills, Swan Hills South and Virginia Hills | 231 | 4.4 |
| Kaybob | 393 | 1.5 |
| Kaybob South | 1,462 | 1.6 |
| Marlboro | 100 | 5.2 |
| Minnehik-Buck Lake | 522 | 1.8 |
| Open Creek | 36 | 4.7 |
| Pembina | 133 | 3.9 |
| Pine Creek | 140 | 1.4 |
| Pine North-west | 155 | 13.3 |
| Quirk Creek [2] | - | - |
| Ricinus West [2] | - | - |

(1) The initial gas in place adjusted for surface losses divided by the initial fully developed marketable gas deliverability.

(2) Recently added to Alberta and Southern Permit.

TABLE D-3 (CONTINUED)

| FIELD | | MARKETABLE GAS AT AUG. 31, 1970 BCF | RESERVE-DELIVERY RATIO BCF/MMCFD |
|---|---|---|---|
| SIMONETTE | | 110 | 5.4 |
| STURGEON LAKE SOUTH | | 63 | 30.8 |
| SUNDRE | | 8 | 14.3 |
| SYLVAN LAKE | | 10 | 1.7 |
| TANGENT | | 64 | 3.0 |
| WASKAHIGAN | | 106 | 4.2 |
| WATERTON | | 1,930 | 3.1 |
| WESTEROSE SOUTH | | 413 | 0.5 |
| WESTWARD HO | | - | - |
| WILDCAT HILLS | | 544 | 5.7 |
| WILDHORSE CREEK | | 56 | 3.7 |
| WILLESDEN GREEN | | 166 | 10.9 |
| WILSON CREEK | | 51 | 2.2 |
| WINDFALL | | 476 | 0.9 |
| | TOTAL | 10,272 | |
| | WEIGHTED AVERAGE | | 1.7 |
| CANADIAN-MONTANA PIPELINE COMPANY (PERMIT NO. CM 54-1 AND CM 61-2) | | | |
| ADEN | | 26 | 2.8 |
| BLACK BUTTE | | 35 | 2.9 |
| COMREY | | 27 | 2.4 |
| KNAPPEN | | 16 | 3.4 |
| LAIT | | 3 | 0.9 |
| MANYBERRIES | | 6 | 0.8 |
| PAKOWKI LAKE | | 7 | 1.0 |
| PENDANT D'OREILLE | | 123 | 1.6 |
| SMITH COULEE | | 1 | 1.0 |
| | TOTAL | 244 | |
| | WEIGHTED AVERAGE | | 1.7 |
| CONSOLIDATED NATURAL GAS LIMITED (PERMIT NO. CNG 69-1) | | | |
| KAYBOB SOUTH | | 1,217 | 1.2 |
| RICINUS | | 42 | 4.8 |

TABLE D-3 (CONTINUED)

| FIELD | MARKETABLE GAS AT AUG. 31, 1970 BCF | RESERVE-DELIVERY RATIO BCF/MMCFD |
|---|---|---|
| RICINUS WEST | 770 | 9.0 |
| STRACHAN | 829 | 2.2 |
| TOTAL | 2,858 | |
| WEIGHTED AVERAGE | | 1.9 |
| TRANS-CANADA PIPE LINES LIMITED (PERMIT NO. TC 70-10) | | |
| ALDERSON | 467 | 5.1 |
| ALIX | 2 | 20.0 |
| AMISK | 9 | 1.2 |
| ARMADA | 9 | 1.9 |
| ATLEE-BUFFALO | 147 | 3.3 |
| BANTRY | 23 | 11.7 |
| BASHAW | 32 | 2.2 |
| BASSANO | 22 | 1.6 |
| BELLIS | 45 | 2.1 |
| BERRY | 7 | 1.9 |
| BIG BEND | 66 | 2.4 |
| BINDLOSS | 206 | 2.2 |
| BIRCH | 13 | 2.5 |
| BLACK DIAMOND | 19 | 15.7 |
| BLUERIDGE | 29 | 1.5 |
| BOYLE | 11 | 0.9 |
| BRAZEAU RIVER | 528 | 2.6 |
| BRUCE | 25 | 2.6 |
| BURNT TIMBER | 258 | 5.6 |
| CAROLINE | 123 | 2.0 |
| CARSTAIRS | 626 | 1.4 |
| CASSILS | 9 | 11.1 |
| CASTOR | 25 | 12.7 |
| CESSFORD | 634 | 1.7 |
| CHESTERMERE | 22 | 2.3 |
| CHIGWELL | 28 | 1.4 |
| CLIVE | 19 | 24.7 |
| CONNORSVILLE | 52 | 2.7 |

TABLE D-3 (CONTINUED)

| FIELD | MARKETABLE GAS AT AUG. 31, 1970 BCF | RESERVE-DELIVERY RATIO BCF/MMCFD |
|---|---|---|
| COUNTESS | 159 | 0.6 |
| CRAIGEND | 180 | 1.0 |
| CROSSFIELD | 293 | 2.3 |
| CROSSFIELD EAST | 665 | 7.1 |
| DRUMHELLER | 72 | 0.8 |
| EDSON | 1,847 | 1.5 |
| ELNORA | 35 | 1.7 |
| ENCHANT | 38 | 0.7 |
| EQUITY | 40 | 3.1 |
| ERSKINE | 40 | 1.9 |
| FENN WEST | 8 | 1.0 |
| FERRIER | 542 | 8.2 |
| FIGURE LAKE | 30 | 1.1 |
| FLAT | 119 | 1.3 |
| GARRINGTON | 7 | 6.3 |
| GHOST PINE | 184 | 1.4 |
| GILBY | 627 | 2.0 |
| GOODWIN | 16 | 9.5 |
| GREENCOURT | 159 | 0.8 |
| HACKETT | 42 | 1.9 |
| HALLIDAY | 3 | 1.3 |
| HARMATTAN EAST | - | - |
| HARMATTAN-ELKTON | 4 | 0.9 |
| HIGHLAND | 1 | 1.4 |
| HOMEGLEN-RIMBEY | 345 | 0.6 |
| HUGHENDEN | 5 | 0.4 |
| HUNTER VALLEY | 20 | 3.0 |
| HUSSAR | 304 | 0.9 |
| INNISFAIL | 80 | 5.2 |
| JARROW | 9 | 1.8 |
| JENNER | 36 | 1.3 |
| JOHNSON | 1 | 1.7 |
| JUMPING POUND WEST | 241 | 10.4 |

TABLE D-3 (CONTINUED)

| FIELD | MARKETABLE GAS AT AUG. 31, 1970 BCF | RESERVE-DELIVERY RATIO BCF/MMCFD |
|---|---|---|
| KILLAM | 14 | 0.5 |
| KIRKWALL | 2 | 2.0 |
| KITSIM | 7 | 0.8 |
| LATHOM | 5 | 1.7 |
| LECKIE | - | 0.3 |
| LITTLE BOW | 25 | 0.7 |
| LONE PINE CREEK | 385 | 3.7 |
| LONG COULEE | 15 | 0.6 |
| LOOKOUT BUTTE | 374 | 4.1 |
| MALMO | 47 | 0.9 |
| MARTEN HILLS | 859 | 1.4 |
| MCMULLEN | 7 | 0.5 |
| MEDICINE HAT | 333 | 5.2 |
| MEDICINE RIVER | 289 | 3.6 |
| MIKWAN | 20 | 1.2 |
| MITSUE | 211 | 58.9 |
| MOOSE | 55 | 10.3 |
| NEVIS | 607 | 1.7 |
| NEWALL | 1 | 2.0 |
| NEW NORWAY | 11 | 2.3 |
| NIPISI | 115 | 43.2 |
| OBED | 159 | 6.0 |
| OLDS | 255 | 3.3 |
| OYEN | 50 | 3.6 |
| PARFLESH | 8 | 1.5 |
| PELICAN | 14 | 4.7 |
| PINCHER CREEK | 282 | 11.1 |
| PLAIN | 57 | 1.3 |
| PREVO | 32 | 2.6 |
| PRINCESS | 99 | 1.0 |
| PROVOST | 654 | 1.7 |
| QUIRK CREEK | 533 | 5.6 |
| RAINIER | 1 | 1.2 |
| RANFURLY | 8 | 1.3 |
| RETLAW | 84 | 1.6 |

TABLE D-3 (CONTINUED)

| FIELD | MARKETABLE GAS AT AUG. 31, 1970 BCF | RESERVE-DELIVERY RATIO BCF/MMCFD |
|---|---|---|
| RICH | 11 | 0.9 |
| RICHDALE | 26 | 0.8 |
| RICINUS | 42 | 4.8 |
| RICINUS WEST | 165 | 9.0 |
| ROWLEY | 61 | 1.2 |
| SCANDIA | 4 | 3.6 |
| SEDALIA | 48 | 8.4 |
| SEDGEWICK | 26 | 1.2 |
| SEIU LAKE | 10 | 3.3 |
| SIBBALD | 23 | 2.2 |
| STANDARD | 20 | 8.6 |
| STANMORE(2) | - | - |
| STRACHAN | 1,085 | 3.1 |
| SUNDRE | 12 | 3.8 |
| SUNNYNOOK | 13 | 1.2 |
| SUPERBA | 1 | 1.1 |
| SWALWELL | 45 | 3.7 |
| SYLVAN LAKE | 363 | 1.8 |
| THREE HILLS CREEK | 151 | 3.8 |
| TROCHU | 10 | 3.3 |
| TURIN | 30 | 1.3 |
| TWINING NORTH | 48 | 2.8 |
| UKALTA | 34 | 4.1 |
| VERGER | 38 | 1.0 |
| VULCAN | 28 | 1.4 |
| WARWICK | 5 | 1.3 |
| WAYNE-ROSEDALE | 287 | 1.3 |
| WESTEROSE | 75 | 22.9 |
| WESTEROSE SOUTH | 505 | 0.5 |
| WHISKEY | 111 | 13.6 |
| WHITECOURT | 116 | 1.0 |

(2) RECENTLY ADDED TO TRANS-CANADA PERMIT.

TABLE D-3 (CONTINUED)

| FIELD | | MARKETABLE GAS AT AUG. 31, 1970 BCF | RESERVE-DELIVERY RATIO BCF/MMCFD |
|---|---|---|---|
| WILDHORSE CREEK | | 55 | 1.9 |
| WILDUNN CREEK | | 17 | 2.4 |
| WILLESDEN GREEN | | 7 | 6.9 |
| WIMBORNE | | 144 | 1.2 |
| WINNIFRED | | 15 | 1.4 |
| WINTERING HILLS | | 56 | 1.8 |
| WOOD RIVER | | 13 | 0.9 |
| | TOTAL | 18,926 | |
| | WEIGHTED AVERAGE | | 1.8 |
| WESTCOAST TRANSMISSION COMPANY LIMITED (PERMIT NO. WC 59-3) | | | |
| CROSSFIELD | | 689 | 2.1 |
| IRRICANA | | 9 | 4.1 |
| SAVANNA CREEK | | 75 | 10.2 |
| | TOTAL | 773 | |
| | WEIGHTED AVERAGE | | 2.3 |
| WESTCOAST TRANSMISSION COMPANY LIMITED AND WESTCOAST TRANSMISSION COMPANY (ALBERTA) LTD. (PERMIT NO. WC 52-1 AND WC 62-5) | | | |
| BRAEBURN | | 57 | 4.4 |
| GORDONDALE | | 21 | 1.4 |
| POUCE COUPE | | 21 | 1.6 |
| POUCE COUPE SOUTH | | 38 | 0.9 |
| WORSLEY | | 59 | 0.4 |
| | TOTAL | 196 | |
| | WEIGHTED AVERAGE | | 0.8 |
| WESTCOAST TRANSMISSION COMPANY LIMITED AND WESTCOAST TRANSMISSION COMPANY (ALBERTA) LTD. (PERMIT NO. WC 61-4) | | | |
| BOUNDARY LAKE SOUTH | | 67 | 1.5 |
| OTHERS | | | |
| ANTELOPE | | 12 | 1.0 |
| ESTHER | | 30 | 0.9 |
| HUDSON | | 2 | 2.0 |
| MEDICINE HAT | | 472 | 5.9 |
| RED COULEE | | 1 | 1.0 |
| | TOTAL | 517 | |
| | WEIGHTED AVERAGE | | 4.3 |
| TOTAL (ALL FIELDS) | | 33,853 | |
| WEIGHTED AVERAGE (ALL FIELDS) | | | 1.8 |

TABLE D-4

RESERVES AVAILABLE TO MEET PRESENT PERMIT COMMITMENTS(1)
(ALL VOLUMES AT 1000 BTU PER CUBIC FOOT)

| PERMITTEE | (1) REMAINING PERMIT COMMITMENT(2) BCF | (2) REMAINING RESERVES IN PERMIT FIELDS BCF | (3) GAS REQUIRED TO MEET TERMINAL YEAR PEAK DAY BCF | (4) TRUNK LINE AND REPROCESSING REQUIREMENTS: FUEL AND SHRINKAGE BCF | (5) TRUNK LINE AND REPROCESSING REQUIREMENTS: AVAILABLE FROM NON-PERMIT FIELDS(3) BCF | (6) TRUNK LINE AND REPROCESSING REQUIREMENTS: NET REQUIREMENTS BCF | (7) TOTAL RESERVES AVAILABLE TO MEET REMAINING PERMIT COMMITMENTS BCF | (8) REMAINING SURPLUS BCF |
|---|---|---|---|---|---|---|---|---|
| ALBERTA AND SOUTHERN GAS CO. LTD. | 8,392 | 10,272 | | 540 | 167 | 373 | 9,899 | 1,507 |
| CANADIAN MONTANA PIPE LINE COMPANY | 244 | 244 | | | | | 244 | |
| CONSOLIDATED NATURAL GAS LIMITED | 1,566 | 2,858 | | 142 | | 142 | 2,716 | 1,150 |
| TRANS-CANADA PIPE LINES LIMITED (4) | 18,459 | 18,926 | | 1,306 | | 1,306 | 17,620 | -839 |
| WESTCOAST TRANSMISSION COMPANY LIMITED (SOUTHERN ALBERTA) (4) | 696 | 773 | 65 | 12 | | 12 | 696 | |
| WESTCOAST TRANSMISSION COMPANY LIMITED (NORTHERN ALBERTA) | 286 | 263 | | 5 | | 5 | 258 | -28 |
| OTHERS | 540 | 517 | — | 9 | — | 9 | 508 | -32 |
| TOTALS | 30,183 | 33,853 | 65 | 2,014 | 167 | 1,847 | 31,941 | 1,758 |
| ROUNDED TOTALS | 30,200 | 33,900 | 100 | 2,000 | 200 | 1,800 | 32,000 | 1,800 |

(1) ALL FIGURES ARE AS OF AUGUST 31, 1970.
(2) ON THE BASIS OF THE HEATING VALUE OF THE GAS AS IT LEAVES THE PROVINCE.
(3) BASED ON ASSUMPTION THAT ONLY ALBERTA AND SOUTHERN HAVE ENTERED INTO CONTRACTS FOR SUCH GAS.
(4) TRANS-CANADA DELIVERIES FROM CERTAIN CROSSFIELD POOLS ARE DEPENDENT ON DELIVERABILITY SURPLUS TO THAT REQUIRED BY WESTCOAST IN THE SAME POOLS.

TABLE D-5

GAS SURPLUS TO ALBERTA'S REQUIREMENTS AND PERMIT COMMITMENTS

AS OF MAY 1, 1970

AS ESTIMATED BY ALBERTA AND SOUTHERN

(ALL VOLUMES IN TRILLIONS OF CUBIC FEET AT 1000 BTU PER CUBIC FOOT)

| | | | |
|---|---|---|---|
| CONTRACTABLE RESERVES | | | |
| Now considered within economic reach | 45.3 | | |
| Less: Deferred | 4.0 | | |
| Total Contractable Reserves | | 41.3 | |
| CONTRACTABLE REQUIREMENTS | | | |
| Contractable Alberta Requirements | | | |
| General requirements | 7.3 | | |
| Permit-related fuel & shrinkage | 1.5 | | |
| Permit Requirements | | | |
| To meet remaining commitments | 30.6 | | |
| To meet terminal year peak day | 0.2 | | |
| Total Contractable Requirements | | 39.6 | |
| CONTRACTABLE SURPLUS | | | 1.7 |
| REMAINING REQUIREMENTS | | | |
| Total Alberta requirements for delivery | 16.3 | | |
| Less: Deliveries from contractable reserves | 6.6 | | |
| Deliveries required from other sources | | 9.7 | |
| Total Alberta requirements for 30th year peak day | 5.3 | | |
| Less: Available from contractable reserves | 2.2 | | |
| Required from other sources to meet 30th year peak day | | 3.1 | |
| Total Remaining Requirements | | 12.8 | |
| REMAINING AND FUTURE RESERVES | | | |
| From deferred gas available within 30 years | 4.0 | | |
| From reserves now considered beyond economic reach | 2.0 | | |
| From reserves providing for terminal year peak day in permits | 0.2 | | |
| From gas not yet established | 11.7 | | |
| Total Remaining and Future Reserves | | 17.9 | |
| FUTURE SURPLUS | | | 5.1 |

TABLE D-6

GAS SURPLUS TO ALBERTA'S REQUIREMENTS AND PERMIT COMMITMENTS

AS OF JULY 15, 1970

AS ESTIMATED BY CONSOLIDATED

(ALL VOLUMES IN TRILLIONS OF CUBIC FEET AT 1000 BTU PER CUBIC FOOT)

| | | | |
|---|---|---|---|
| CONTRACTABLE RESERVES | | | |
| Now considered within economic reach | 47.1 | | |
| Less: Deferred | 3.4 | | |
| Total Contractable Reserves | | 43.7 | |
| CONTRACTABLE REQUIREMENTS | | | |
| Alberta requirements | 7.6 | | |
| Pipe line fuel, plant shrinkage and losses | 2.0 | | |
| Permit commitments | 30.8 | | |
| Cushion gas for permits | 0.3 | | |
| Total Contractable Requirements | 40.7 | | |
| CONTRACTABLE SURPLUS | | 3.0 | |
| REMAINING REQUIREMENTS | | | |
| 30-year Alberta requirements (excluding line loss and shrinkage) | 13.8 | | |
| Cushion gas for Alberta requirements | 5.2 | | |
| Total requirements plus cushion gas | 19.0 | | |
| Less: Contractable Alberta requirements | 7.6 | | |
| Total Remaining Requirements | | 11.4 | |
| REMAINING AND FUTURE RESERVES | | | |
| From deferred reserves | 3.4 | | |
| From reserves now considered beyond economic reach | 2.0 | | |
| From cushion gas for permits | 0.3 | | |
| From growth of gas reserves | 11.2 | | |
| Total Remaining and Future Reserves | | 16.9 | |
| FUTURE SURPLUS | | | 5.5 |

TABLE D-7

GAS SURPLUS TO ALBERTA'S REQUIREMENTS AND PERMIT COMMITMENTS

AS ESTIMATED BY THE BOARD

AS OF AUGUST 31, 1970

(All Volumes in Trillions of Cubic Feet At 1000 Btu Per Cubic Foot)

| | | | | | |
|---|---|---|---|---|---|
| CONTRACTABLE RESERVES | | | | | |
| Now considered within economic reach | | | 46.1 | | |
| Less: Deferred | | | 4.0 | | |
| Total Contractable Reserves | | | | 42.1 | |
| CONTRACTABLE REQUIREMENTS | | | | | |
| Contractable Alberta Requirements: | | | | | |
| General requirements | | 7.3 | | | |
| Permit-related fuel and shrinkage | | 2.0 | | | |
| Permit Requirements: To meet remaining commitments | | 30.2 | | | |
| To meet terminal year peak day | | 0.1 | | | |
| Total Contractable Requirements | | | | 39.6 | |
| CONTRACTABLE SURPLUS | | | | | 2.5 |
| REMAINING REQUIREMENTS | | | | | |
| Total Alberta requirements for delivery | 16.0 | | | | |
| Less: Deliveries from contractable reserves | 6.5 | | | | |
| Less: Permit-related fuel and shrinkage | 2.0 | | | | |
| Deliveries required from other sources | | 7.5 | | | |
| Total Alberta requirements for 30th-year peak day | 4.7 | | | | |
| Less: Available from contractable reserves | 0.8 | | | | |
| Required from other sources to meet 30th-year peak day | | 3.9 | | | |
| Total Remaining Requirements | | | 11.4 | | |
| REMAINING AND FUTURE RESERVES | | | | | |
| From deferred gas available within 30 years | | 4.0 | | | |
| From reserves now considered beyond economic reach | | 1.7 | | | |
| From reserves providing for terminal years peak day in permits | | 0.1 | | | |
| From gas not yet established | | 11.3 | | | |
| Total Remaining and Future Reserves | | | 17.1 | | |
| FUTURE SURPLUS | | | | | 5.7 |

TABLE D-8

DEFERRED RESERVES

(ALL VOLUMES AT 1000 BTU PER CUBIC FOOT)

| POOL MARKETABLE WITHIN 30 YEARS | MARKETABLE RESERVES AT AUGUST 31, 1970 BCF |
|---|---|
| BONNIE GLEN D-3A | 382 |
| GOLDEN SPIKE D-3A | 248 |
| HARMATTAN EAST RUNDLE | 963 |
| HARMATTAN-ELKTON RUNDLE C | 1,065 |
| KAYBOB CADOMIN B | 64 |
| KAYBOB SOUTH BEAVERHILL LAKE A | 138 |
| LEDUC-WOODBEND D-3A | 365 |
| RICINUS CARDIUM A | 140 |
| WESTEROSE D-3 | 102 |
| OTHER SMALL AND CONFIDENTIAL RESERVES | 516 |
| TOTAL DEFERRED RESERVES | 3,983 |

## APPENDIX E

### THE APPLICATIONS FOR AUTHORIZATION FOR THE REMOVAL OF ADDITIONAL QUANTITIES OF GAS AND THE EFFECT THE AUTHORIZATION WOULD HAVE ON SURPLUS

#### Alberta and Southern

Alberta and Southern is now authorized under Permit No. AS 69-5 to remove from the Province 10,000 billion cubic feet of gas of which some 1,800 billion cubic feet have been removed to August 31, 1970. It applied for an increase of 1,350 billion cubic feet in the quantity authorized, bringing the total to 11,350 billion cubic feet, at a maximum daily rate of 1,434 million cubic feet from the fields now named in its permit and from one new field. The volumes before and after adjustment to the basis of 1,000 Btu per cubic foot are compared below.

| | As is Basis | 1,000 Btu Basis |
|---|---|---|
| Existing permit volume, Bcf | 10,000 | 10,230 |
| Additional applied for, Bcf | 1,350 | 1,381 |
| Volume if the application is granted, Bcf | 11,350 | 11,611 |
| Removed to August 31, 1970, Bcf | 1,797 | 1,838 |
| Remaining permit volume if the application is granted, Bcf | 9,553 | 9,773 |
| Present maximum daily rate, MMcfd | 1,270 | 1,299 |
| Maximum daily rate applied for, MMcfd | 1,434 | 1,467 |

The Board estimates that about an additional 70 billion cubic feet of 1,000 Btu gas would be required for Trunk Line and reprocessing plant fuel and shrinkage if the application were granted. Table E-1 shows that Alberta and Southern would have available

to it a total of 10,386 billion cubic feet from the fields now named in the permit and applied for. This includes a portion of the extra gas requested from the Virginia Hills Field. The Board finds the reserves in the Virginia Hills Belloy A Pool to be some 45 billion cubic feet (48 billion cubic feet on a 1,000 Btu basis) rather than 60 billion as estimated by the applicant. The Board thus finds that Alberta and Southern has sufficient reserves available to it and under contract to qualify for the full volume applied for. This is after provision for some 443 billion cubic feet for related fuel and shrinkage.

Consolidated

Consolidated is now authorized under Permit No. CNG 69-1 to remove from the Province 1,535 billion cubic feet. To date none of this gas has been removed. It has applied for an increase of 1,457 billion cubic feet in the quantity authorized under Permit No. CNG 69-1. This would bring the total to 2,992 billion cubic feet at a maximum of 440 million cubic feet per day from the fields now named in its permit and from two new fields. These volumes are equivalent to 3,052 billion cubic feet and 449 million cubic feet respectively on the basis of 1,000 Btu per cubic foot.

All volumes subsequently referred to in this Appendix are on the basis of 1,000 Btu per cubic foot.

Table E-1 shows the remaining marketable reserves available to Consolidated in the areas applied for and in the fields currently named in its permit. These are based on the Board's assessment of the contract data available to it. The table shows

that of the total 3,052 billion cubic feet applied for by Consolidated, the Board finds that only some 2,927 billion cubic feet is available to it. Accordingly, the Board is prepared to consider the Consolidated application in a modified form, involving a total of 2,927 billion cubic feet of reserves. Of this volume, some 245 billion cubic feet would be required for fuel and shrinkage reducing the volume available for removal from the Province to 2,682 billion cubic feet.

The results of the Board's analysis with respect to the meeting of the permit commitments, the additional volumes applied for by Alberta and Southern, the reduced Consolidated volume and including related fuel and shrinkage are presented in Table E-2. The table is similar in form to the previously discussed Table D-4. The only changes have been to replace the Alberta and Southern and Consolidated entries with new entries reflecting the additional quantities applied for (as modified by the Board in the case of Consolidated), the reserves available to the applicants, and the increased fuel and shrinkage requirements.

Table E-2 shows that with the inclusion of the additional volumes, the total remaining permit commitments would be some 32.7 trillion cubic feet and the reserves available to meet these commitments, after provision for cushion gas and related fuel and shrinkage, would total some 32.0 trillion cubic feet. The resulting deficiency of some 0.7 trillion cubic feet is primarily due to the assumption that no other permittees have entered into contracts to supply gas for fuel and shrinkage

requirements from non-permit fields.

Table E-3 presents the calculations of the amount of gas that would be surplus to Alberta's requirements and the permit commitments if the application of Alberta and Southern and the application of Consolidated in the reduced volumes were granted. Most of the figures used in the preparation of the table have been taken directly from Table D-7. The exceptions to this are the contractable permit requirements which are taken from Table E-2 and include the volumes applied for by Alberta and Southern and the reduced volume for Consolidated and the permit-related fuel and shrinkage which has been increased to reflect the increased permit volumes.

Table E-3 shows that on the basis of the Board's estimates there would be a deficiency of 0.2 trillion cubic feet in the contractable category if the additional volumes were authorized. This is after provisions for the additional fuel and shrinkage requirements. The table also shows that the remaining and future reserves would exceed the remaining requirements by some 5.7 trillion cubic feet.

The Board is not prepared to consider for removal from the Province volumes of gas which would result in a deficiency in contractable reserves. Accordingly, the volumes applied for, reduced in the case of Consolidated, should be further reduced a total of 0.2 trillion cubic feet. Since the volume of 1,381 billion cubic feet requested by Alberta and Southern and the reduced Consolidated volume of 1,116 billion cubic feet are

of approximately the same magnitude, the Board believes each volume should be reduced an equal amount. The Board therefore reduces the Alberta and Southern permit volume shown in Table E-2 to 9,673 billion cubic feet and further reduces the Consolidated volume to 2,582 billion cubic feet. This reduces the remaining permit commitments shown in Tables E-2 and E-3 to 32.5 trillion cubic feet if the adjusted applications were granted. A balance between the contractable reserves and requirements results, and the future surplus would remain at 5.7 trillion cubic feet.

TABLE E-1

MARKETABLE RESERVES AND RESERVE-DELIVERY RATIO
OF FIELDS APPLIED FOR
(ALL VOLUMES AT 1000 BTU PER CUBIC FOOT)

| FIELD | | MARKETABLE GAS AT AUG. 31, 1970 BCF | RESERVE-DELIVERY RATIO[1] BCF/MMCFD |
|---|---|---|---|
| ALBERTA AND SOUTHERN GAS CO. LTD. | | | |
| FIELDS APPLIED FOR | | | |
| RICINUS | | 66 | 4.8 |
| VIRGINIA HILLS[2] | | 48 | 2.4 |
| | TOTAL | 114 | |
| | WEIGHTED AVERAGE | | 3.3 |
| FIELDS CURRENTLY IN PERMIT (FROM TABLE D-3) | | | |
| | TOTAL | 10,272 | |
| | WEIGHTED AVERAGE | | 1.7 |
| TOTAL | | 10,386 | |
| WEIGHTED AVERAGE | | | 1.7 |
| CONSOLIDATED NATURAL GAS LIMITED | | | |
| FIELDS APPLIED FOR | | | |
| CRAIGEND | | 37 | 1.0 |
| DONALDA | | 32 | 3.0 |
| | TOTAL | 69 | |
| | WEIGHTED AVERAGE | | 1.4 |
| FIELDS CURRENTLY IN PERMIT (FROM TABLE D-3) | | | |
| | TOTAL | 2,858 | |
| | WEIGHTED AVERAGE | | 1.9 |
| TOTAL | | 2,927 | |
| WEIGHTED AVERAGE | | | 1.8 |

(1) THE INITIAL GAS IN PLACE ADJUSTED FOR SURFACE LOSSES DIVIDED BY THE INITIAL FULLY DEVELOPED MARKETABLE GAS DELIVERABILITY.

(2) THIS FIELD IS PRESENTLY IN PERMIT NO. AS 69-5, BUT AN INCREASE OF THESE RESERVES IS REQUESTED.

TABLE E-2

RESERVES AVAILABLE TO MEET PRESENT PERMIT COMMITMENTS
AND THE ADJUSTED APPLICATIONS (1)
(ALL VOLUMES AT 1000 BTU PER CUBIC FOOT)

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | | | TRUNK LINE AND REPROCESSING REQUIREMENTS | | | | | |
| PERMITTEE | REMAINING PERMIT COMMITMENT(2) BCF | REMAINING RESERVES IN PERMIT FIELDS BCF | GAS REQUIRED TO MEET TERMINAL YEAR PEAK DAY BCF | FUEL AND SHRINKAGE BCF | AVAILABLE FROM NON-PERMIT FIELDS (3) BCF | NET REQUIREMENTS BCF | TOTAL RESERVES AVAILABLE TO MEET REMAINING PERMIT COMMITMENTS BCF | REMAINING SURPLUS BCF |
| ALBERTA AND SOUTHERN GAS CO. LTD. | 9,773 | 10,386 | | 610 | 167 | 443 | 9,943 | 170 |
| CANADIAN MONTANA PIPE LINE COMPANY | 244 | 244 | | | | | 244 | |
| CONSOLIDATED NATURAL GAS LIMITED | 2,682 | 2,927 | | 245 | | 245 | 2,682 | |
| TRANS-CANADA PIPE LINES LIMITED (4) | 18,459 | 18,926 | | 1,306 | | 1,306 | 17,620 | -839 |
| WESTCOAST TRANSMISSION COMPANY LIMITED (SOUTHERN ALBERTA) (4) | 696 | 773 | 65 | 12 | | 12 | 696 | |
| WESTCOAST TRANSMISSION COMPANY LIMITED (NORTHERN ALBERTA) | 286 | 263 | | 5 | | 5 | 258 | -28 |
| OTHERS | 540 | 517 | | 9 | | 9 | 508 | -32 |
| TOTALS | 32,680 | 34,036 | 65 | 2,187 | 167 | 2,020 | 31,951 | -719 |
| ROUNDED TOTALS | 32,700 | 34,100 | 100 | 2,200 | 200 | 2,000 | 32,000 | -700 |

(1) ALL FIGURES ARE AS OF AUGUST 31, 1970.
(2) ON THE BASIS OF THE HEATING VALUE OF THE GAS AS IT LEAVES THE PROVINCE.
(3) BASED ON THE ASSUMPTION THAT ONLY ALBERTA AND SOUTHERN HAVE ENTERED INTO CONTRACTS FOR SUCH GAS.
(4) TRANS-CANADA DELIVERIES FROM CERTAIN CROSSFIELD POOLS ARE DEPENDENT ON DELIVERABILITY SURPLUS TO THAT REQUIRED BY WESTCOAST IN THE SAME POOLS.

TABLE E-3

GAS SURPLUS TO ALBERTA'S REQUIREMENTS AND PERMIT COMMITMENTS AND THE ADJUSTED APPLICATIONS AS ESTIMATED BY THE BOARD

AS OF AUGUST 31, 1970

(ALL VOLUMES IN TRILLIONS OF CUBIC FEET AT 1000 BTU PER CUBIC FOOT)

| | | | | |
|---|---|---|---|---|
| CONTRACTABLE RESERVES | | | | |
| Now considered within economic reach | | | 46.1 | |
| Less: Deferred | | | 4.0 | |
| Total Contractable Reserves | | | | 42.1 |
| CONTRACTABLE REQUIREMENTS | | | | |
| Contractable Alberta requirements: | | | | |
| General Requirements | | 7.3 | | |
| Permit-related fuel and shrinkage | | 2.2 | | |
| Permit requirements: To meet remaining commitments | | 32.7 | | |
| To meet terminal year peak day | | 0.1 | | |
| Total Contractable Requirements | | | | 42.3 |
| CONTRACTABLE SURPLUS | | | | -0.2 |
| REMAINING REQUIREMENTS | | | | |
| Total Alberta requirements for delivery | 16.0 | | | |
| Less: Deliveries from contractable reserves | 6.5 | | | |
| Less: Permit-related fuel and shrinkage | 2.2 | | | |
| Deliveries required from other sources | | 7.5 | | |
| Total Alberta requirements for 30th-year peak day | 4.7 | | | |
| Less: Available from contractable reserves | 0.8 | | | |
| Required from other sources to meet 30th-year peak day | | 3.9 | | |
| Total Remaining Requirements | | | 11.4 | |
| REMAINING AND FUTURE RESERVES | | | | |
| From deferred gas available within 30 years | | 4.0 | | |
| From reserves now considered beyond economic reach | | 1.7 | | |
| From reserves providing for terminal years peak day in permits | | 0.1 | | |
| From gas not yet established | | 11.3 | | |
| Total Remaining and Future Reserves | | | 17.1 | |
| FUTURE SURPLUS | | | | 5.7 |

APPENDIX F

FORM OF PERMIT

ALBERTA AND SOUTHERN GAS CO. LTD.

IN THE MATTER of The Gas Resources Preservation Act, 1956, being chapter 19 of the Statutes of Alberta, 1956; and

IN THE MATTER OF A Permit to Alberta and Southern Gas Co. Ltd. authorizing the removal of gas from the Province

PERMIT NO. AS 71-6

WHEREAS Alberta and Southern Gas Co. Ltd. (herein called "the Permittee") is removing gas from the Province under the authority of Permit No. AS 69-5; and

WHEREAS the Permittee has applied to the Oil and Gas Conservation Board for an increase in the volumes of gas that it may remove or cause to be removed from the Province, and for other amendments and consolidation of its permit; and

WHEREAS the Board upon inquiry into and hearing of the application has found that the Permittee is a perosn who appears to have made arrangements to purchase gas within the Province and who proposes to remove such gas from the Province and that the provisions of The Gas Resources Preservation Act, 1956, affecting the application have been complied with; and

WHEREAS the Board is of the opinion that the granting of this Permit for the removal of gas from the Province is in the public interest having regard to the present and future needs of

persons within the Province and to the established reserves and the trends in growth and discovery of reserves of gas in the Province; and

WHEREAS the Lieutenant Governor in Council has given his approval by Order in Council, numbered O.C. , and dated .

THEREFORE, the Oil and Gas Conservation Board, pursuant to the provisions of The Gas Resources Preservation Act, 1956, being chapter 19 of the Statutes of Alberta, 1956, hereby grants a permit to Alberta and Southern Gas Co. Ltd., and hereby authorizes the removal of gas from the Province, subject to the regulations and orders made pursuant to the provisions of the said Act and to the terms and conditions prescribed in this Permit as follows:

1. Subject to the conformity by the Permittee with the terms and conditions hereof, this Permit shall be operative for a term commencing on the date hereof and ending on October 31, 1995.

2. The quantity of gas that may be removed from the Province pursuant to this Permit shall not exceed

(a) during the term of the Permit and together with gas removed under Permit No. AS 59-1, Permit No. AS 60-2, Permit No. AS 64-3, Permit No. AS 67-4 and Permit No. AS 69-5, 11,253,000,000,000 cubic feet, nor

(b) during any consecutive 24-hour period or any consecutive 12-month period ending October 31, rates limited by field productivity and good engineering practice, but in a 24-hour period such rates shall not exceed 1,434,000,000 cubic feet and in a 12-month period such rates shall not exceed 496,000,000,000 cubic feet.

3. The quantity of gas that may be removed from the Province, in accordance with clause 2, subclause (b), during any 12-month period ending October 31, may be augmented by any part of the quantity by which gas removed from the Province under this Permit, Permit No. AS 64-3, or Permit No. AS 67-4, in the last preceding four-year period ending October 31, shall have been less than the quantity authorized by the permit or permits to be so removed in the four-year period and which has not, in the meantime, been removed from the Province as an augmentation authorized by this clause, but nothing herein authorizes the removal of gas from the Province in any consecutive 24-hour period or during the term of the Permit in excess of the volumes stipulated for such periods in clause 2.

4. Notwithstanding the provisions of clause 2, subclause (b), the Permittee, for the purpose only of alleviating temporary operating problems caused by pipe line or equipment failure, may removed in any consecutive 24-hour period 110 per cent of the volume of gas authorized by said subclause (b).

5. The Permittee, subject to clause 8, may remove or cause

to be removed from the Province under the authority of this Permit, only gas produced from the following pools, fields and areas:

Belloy Field

Berland River Field

Bigoray Field

Bigstone Field

Brazeau River Field

Caroline Field

Carson Creek Field

Carson Creek North Field

Crossfield Rundle A Pool

Eaglesham Field

Ferrier Cardium B Pool

Ferrier Viking A Pool

Fox Creek Field

Gold Creek Field

Harmattan-Elkton D-3 A Pool

Homeglen-Rimbey Field

Hunter Valley Field

Judy Creek Field

Kaybob Field

Kaybob South Viking A Pool

Kaybob South Cadomin A Pool

Kaybob South Cadomin B Pool

Kaybob South Cadomin C Pool

Kaybob South Cadomin D Pool

Kaybob South Beaverhill Lake A Pool

Kaybob South Triassic A Pool

Marlboro Field

Minnehik-Buck Lake Field

Open Creek Field

Pembina Lobstick Glauconitic A Pool

Pembina Lobstick Glauconitic C Pool

Pembina Lobstick Glauconitic D Pool

Pembina Lobstick Ostracod A Pool

Pembina Lobstick Ostracod B Pool

Pembina Pekisko B Pool

Pine Creek Field

Pine North-west Field

Quirk Creek Field

Ricinus Field

Ricinus West Field

Simonette Field

Sturgeon Lake South Field

Sundre Field

Swan Hills Field

Swan Hills South Field

Sylvan Lake Field

Tangent Field

Virginia Hills Field

Waskahigan Field

Waterton Field

Westerose South Field

Westward Ho Field

Wildcat Hills Field

Wildhorse Creek Field

Willesden Green Field

Wilson Creek Field

Windfall Field

6. Not more than 315,000,000,000 cubic feet of gas from the Judy Creek Field, the Swan Hills Field, the Swan Hills South Field and the Virginia Hills Field shall be removed or caused to be removed from the Province under the authority of this Permit.

7. For the purposes of this Permit, where gas is acquired by the Permittee from sources other than the pools, fields and areas named in clause 5, such gas shall be deemed to be used first to supply sales to consumers, communities and utilities in Alberta, The Alberta Gas Trunk Line Company Limited fuel and losses and fuel and shrinkage at reprocessing plants.

8. Gas acquired in Alberta by the Permittee, in exchange for equal volumes of gas, adjusted for any difference in higher heating value, produced from pools, fields or areas named in clause 5, may be removed from the Province under the authority of this Permit.

9. The Permittee shall remove or cause to be removed pursuant to this Permit only such gas as is delivered through the facilities of The Alberta Gas Trunk Line Company Limited

(a) to the pipe line of Alberta Natural Gas Company on behalf of the Permittee, at the interconnection of the said facilities and pipe line at a

location in Section 17, Township 8, Range 5, West of the 5th Meridian, approved by the Board, or

(b) to the pipe line of Canadian-Montana Pipe Line Company for sale by the Permittee to Canadian-Montana Pipe Line Company, at the interconnection of the said facilities and pipe line at a location in Township 1, Range 26, West of the 4th Meridian, approved by the Board.

10. (1) All gas removed from the Province pursuant to this Permit shall be measured by or on behalf of the Permittee by master meters approved by the Board and located at the points at which gas is delivered in accordance with clause 9, and in the event that other gas is measured by such a meter, the part of the measured gas that is being removed pursuant to this Permit shall be determined in a manner approved by the Board.

(2) The specific gravity and higher heating value of all gas received by the Permittee through the facilities of The Alberta Gas Trunk Line Company Limited shall be measured by or on behalf of the Permittee at the points at which gas is delivered by The Alberta Gas Trunk Line Company Limited to the Permittee.

(3) The measurements required by this clause shall be made in a manner approved by the Board and shall be reported monthly in a manner approved by the Board.

11. Subject to section 14 of the said Act, all quantities of gas for the purpose of this Permit shall be referred to a 14.65

pounds per square inch absolute pressure base and a 60 degree Fahrenheit temperature base.

12. Notwithstanding the provisions of any contract for the purchase or other acquisition of gas, the Board may require the extraction of any substance or substances except methane from any gas before its removal from the Province pursuant to this Permit.

13. The Permittee will supply gas from the pipe line of The Alberta Gas Trunk Line Company Limited at a reasonable price to any community or consumer within the Province, or to any public utility requiring gas for such a community or consumer, that is willing to take delivery of gas at a point on the pipe line, and that, in the opinion of the Board, can reasonably be so supplied by the Permittee.

14. If any community, consumer or public utility is willing to take delivery of gas pursuant to clause 13, and agreement on the price to be paid for the gas cannot be reached, the price to be paid shall be determined by the Public Utilities Board on the application of an interested party, and the part of the price attributable to transportation shall be based on the assumption that the gas has been supplied from the capable source or sources available to the Permittee nearest to the point of delivery.

15. Notwithstanding the provisions hereof, the Permittee shall comply with the provisions of any Act, competent regulation, order or direction governing the drilling for, production, conservation, gathering, transportation, processing, purchasing,

acquisition, sale, measurement, reporting, testing, supply or delivery of gas within the Province.

16. Permit No. AS 69-5 is rescinded.

MADE at the City of Calgary, in the Province of Alberta, this day of , A. D. 19 .

OIL AND GAS CONSERVATION BOARD

G. W. Govier

Chairman

# APPENDIX G

## FORM OF AMENDMENT OF PERMIT

## CONSOLIDATED NATURAL GAS LIMITED

IN THE MATTER of The Gas Resources Preservation Act, 1956, being chapter 19 of the Statutes of Alberta, 1956; and

IN THE MATTER of a Permit to Consolidated Natural Gas Limited authorizing the removal of gas from the Province

## AMENDMENT OF PERMIT NO. CNG 69-1

The Oil and Gas Conservation Board, pursuant to The Gas Resources Preservation Act, 1956, being chapter 19 of the Statutes of Alberta, 1956, having heard an application by Consolidated Natural Gas Limited for amendment of Permit No. CNG 69-1, having regard to its own knowledge and responsibility under the Act, and the Lieutenant Governor in Council having given his approval by Order in Council dated                                        and numbered O.C.              , hereby orders as follows:

1. Permit No. CNG 69-1 is amended.

2. Clause 2 of the terms and conditions of the Permit is amended

   (a) as to subclause (a) by striking out the numeral "1,535,000,000,000" and by substituting the numeral "2,531,000,000,000",

   (b) as to subclause (b) by striking out the numeral "240,000,000" and by substituting the numeral "440,000,000", and

(c) as to subclause (b) by striking out the numeral "80,000,000,000" and by substituting the numeral "140,000,000,000".

3. Clause 5 of the terms and conditions of the Permit is amended by adding to the list of pools, fields and areas "Craigend Field" and "Donalda Field".

MADE at the City of Calgary, in the Province of Alberta, this day of A.D. 19 .

OIL AND GAS CONSERVATION BOARD

G. W. Govier

Chairman